May 1997

BOARDWATCH MAGAZINE

Guide to Internet Access and the World Wide Web

Mexico -
Internet Access South of the Border



Multi-Homing -
Are Two Internet Connections Better Than One?

Wireless Internet Neighborhoods

DOMAIN NAMES -
A New World of Top Level Domains

05>
0 74470 03396 7
$5.95 U.S. & CANADA

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THERE ARE ENOUGH COMPLEXITIES IN LIFE. CONNECTING TO THE INTERNET SHOULDN'T BE ONE OF THEM.

Creating an Internet presence can be a frustrating experience, even for the expert. Beyond the web server there are routers to make the connections, FTP to move the files, and e-mail servers to give your mail a home. And don't forget Domain Name Servers that are required so the world can know your name. Even after you gather all the pieces, you still have to integrate them. And the costs, in time and money, can be staggering. But now there is an easier way.

THE INTERNET PRESENCE IN A BOX

The Internet Protocol Adapter (IPAD) is the only product that fully integrates a router, terminal server, and core Internet services (WWW, DNS, FTP, e-mail) into a single device. With all the necessary internal and external connections, Domain Name Service, and other required functions, IPAD includes everything needed to easily establish a complete Internet presence. In fact, it's so complete, you can add remote access by simply plugging in modems and dialing in with any Internet compatible computer.

BUILT WITH PERFORMANCE AND DURABILITY IN MIND

The IPAD's capability is housed in a rack-mount chassis of battle-ready construction. Its custom software, optimized for the Pentium processor, yields an unprecedented combination of performance and durability that you can never get from a general purpose operating system. The IPAD may be easy to use, but it's no toy.

	IPAD	Windows NT
Computer Hardware for Server CPU	Comparable performance $7465	166 Mhz Pentium, 2 GIG SCSI Disk, Ethernet, Caching Controller 96 MB RAM, $3500
Router Software Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	$1800 1-3 hrs $70 Avg $1870
System Software O/S Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	$895 5-30 hrs $615 Avg $1510
Web Server Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	Included 3-25 hrs $490 Avg $490
FTP Server Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	Included 1-2 hrs $50 Avg $50
ONS Server Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	$495 5-80 hrs $1600 Avg $2095
E-Mail Server Configuration Time Configuration Cost Sub Total	Included Pre-configured – –	$580 10-100 hrs $1900 Avg $2480
Support Costs Per Year	$795 Includes Hardware and Software Protection	$2100 No Hardware or Software Protection
Number of Vendors	1	5
Total Cost	$8260	$13,600
Time from receipt to fully operational site	2 Days	120 Days

PLUG 'N PLAY AND WALK AWAY

Many products claim to be easy to use, but the proof is in the time you spend getting it up and running. With other products you have to learn *everything* before you can do *anything*, and with the Internet there's a lot to learn. Only the IPAD allows you to get started immediately, and learn as you go. eSoft pre-configures the IPAD even down to your IP addresses and domain name, so it's no wonder that Information Week said of the IPAD *"from box to working system in two hours even with mistakes."*

And this ease of use doesn't stop there. With an IPAD even those who don't have formal training can confidently grow and maintain their own network.

AND IT CAN EVEN DO YOUR BILLING

The IPAD has been the foundation for many successful startup ISPs. With the addition of the IPAD Complete Billing Manager (ICBM), account management, credit card charging and invoice generation are automated. Spend your time building your business instead of wondering where your business is.

GO WITH A WINNER!

Infoworld Magazine said *"The IPAD represents an elegant solution when you need to easily build an Internet or Intranet presence. Considering the time it saves you, the price represents a good value."* In 1995 John C. Dvorak gave the IPAD his PC Telecommunications Excellence Award because he recognized the IPAD advantage.

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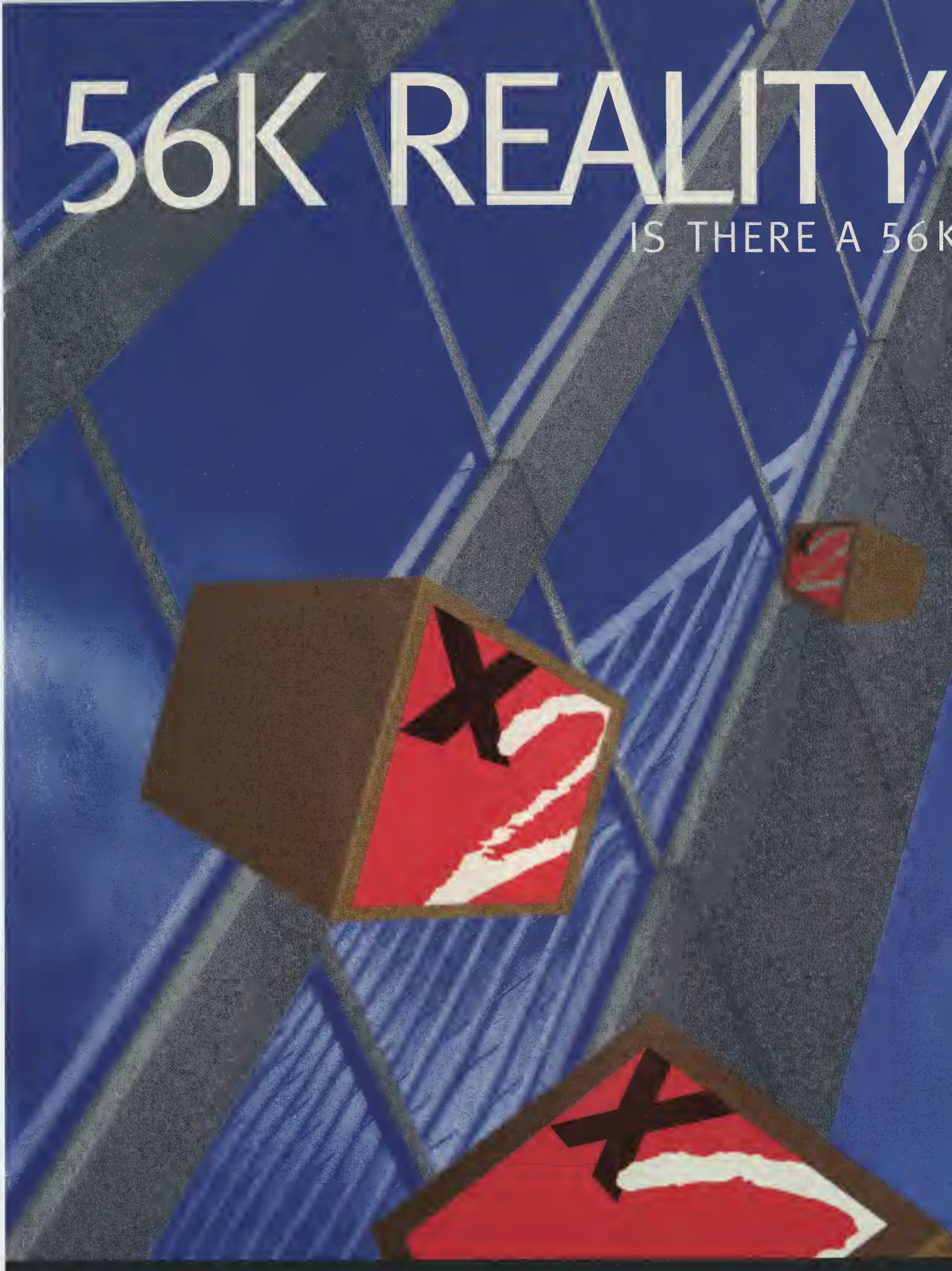
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56K REALITY

IS THERE A 56K



TOTAL CONTROL ACCESS CONCENTRATORS • NETSERVER REMOTE ACCESS SERVER

x 2 T E C H N O L O G Y

XTRA

Volume 1, Number 4

56K REALITY CHECKLIST

Learn about the benefits of a true end-to-end 56 Kbps solution. Read on for real information on x2 and 56 Kbps technologies.

Is there a 56K technology that I can offer my clients today?

Yes. x2 Technology is available right now. Which means that any x2 Sportster® or Courier™ modem that you buy today can now download information at speeds up to 56 Kbps.* And networks can now support 56 Kbps* applications with the Total Control™ Enterprise Network Hub or any of our NETServer I-modem™ remote access servers, Modem Pool I-modem or Courier I-modem products.

How did U.S. Robotics deliver x2 before the rest of the market?

- **We didn't have to re-design our products to accommodate the new technology.** The majority of U.S. Robotics' installed product base has always been x2-capable because we've developed our products with our own DSP modem technology. This technology has enabled us to accommodate new technologies – like 56Kbps – with simple software upgrades.† Other manufacturers are either trying to develop a similar architecture or will require new hardware to support 56 Kbps technology with their existing equipment.

What does it take to connect with x2?

x2 connections require x2 support at both ends of a connection. And 56 Kbps* downloads require digital technology – such as ISDN (BRI or PRI) or T-1 – at your end of the connection. x2 will not work with modem-to-modem analog connections.

Can my subscribers expect all of their x2 downloads be delivered at 56 Kbps?

No. Top speeds are approximately 53 Kbps due to regulatory restrictions on the power of service provider output in the United States and Canada. Additionally, factors like line conditions and traffic can impact performance – just as they did with V.34 connections. In real applications, users are realizing speeds ranging from the 40s to the low 50s (Kbps).

Is x2 the industry standard?

While an official standard hasn't been announced, x2, by many estimations, might quickly become a de facto standard. Why? Because x2 is being supported by a growing list that includes over 500 ISPs who represent over 18 million of the estimated 25 million Internet subscribers. New x2 products are shipping now... and x2 is a simple software upgrade away for the ISPs who have pre-installed U.S. Robotics equipment.

Who decides on the standard?

New standards are defined in standards bodies that consist of groups of representatives from the telecommunications industry at the ITU-T and North American TIA standards committees. These task forces discuss and vote on submitted technologies – a process that can take anywhere from 6 to 24 months.
U.S. Robotics participates in both of these standards bodies.

Will U.S. Robotics support the eventual standard?

Absolutely. With x2 at both ends, we can guarantee our customers an easy path to the eventual standard. What's more, we submitted x2 to the ITU-T standards committee before any other company (and even before we announced x2). U.S. Robotics is actively working with ITU-T and the North American TIA – standards bodies that are reviewing 56 Kbps technologies.

Is x2 Technology being licensed to other vendors?

Yes. U.S. Robotics is aggressively licensing x2 to modem and chipset vendors as well as PC manufacturers including: Dell, Gateway 2000, Acer, Hitachi, Hewlett-Packard, Packard Bell, NEC, Hayes, Logicode, Texas Instruments, Cirrus Logic, Cardinal and others. You can expect to see many other modem manufacturers shipping x2 products in the future.

For a complete reality checklist call or visit our web site.

Request your free copy of x2: THE GAME on CD ROM.



You could win a free x2 Courier™ V.Everything® modem.

The x2 Xtreme Advantage Program:

THE TIME IS NOW

x2 is only a local call away in hundreds of cities across virtually the entire United States and Canada.

ISPs worldwide are taking part in x2 Xtreme Advantage, a program exclusively for ISPs. The program offers ISPs the opportunity to reach the millions of Courier,™ Sportster,® and Megahertz® modem users accessing the Internet with 56 Kbps* technology

The best competitive advantages for ISPs, including:

- access to millions of subscribers who use U.S. Robotics modems
- enhanced visibility through U.S. Robotics marketing programs
- inclusion in the *Connections* CD that ships with every Sportster and Courier modem
- opportunities to capitalize on the heavily-marketed x2 Technology
- listing of your service on the U.S. Robotics worldwide web site – reach millions of people who are interested in getting downloads on the Internet at up to 56 Kbps.*

Register today

Become eligible for the x2 Xtreme Advantage program by using U.S. Robotics x2 remote access and/or Modem Pool I-modem products at your POP locations. Then simply fill out the registration form that's available at www.usr.com/x2, or by calling **1.800.877.7533**, ext. **6739**.

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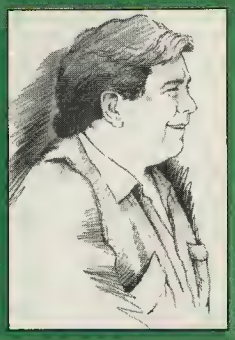
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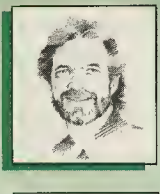
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EDITOR'S NOTES by Jack Rickard

OH...THAT CONSOLIDATION

We've been reading for months about the coming shakeout in small ISPs that will leave a handful of large players delivering Internet access. This was termed CONSOLIDATION and was viewed as quite inevitable by all the analysts and pundits worldwide. I hate to crow (oh, I probably don't actually mind it too badly), but after nearly a year as the lone voice on the other side of this it should be apparent by now that we didn't miss by much—one more time in a row. Small ISPs are both thriving and increasing in numbers.

Ironically, the industry has gone into an absolute frenzy of consolidation—but at the TOP. Large players feeding on each other in a generally friendly, but frenzied series of acquisitions and mergers. Rather than among the smaller players—this is happening among large networking hardware vendors, large telcos, and the painfully eroding large commercial online services.

In telco land, it is no news that British Telcom and MCI have entered a $20 billion betrothal. But I suppose it is current that both the Bell Atlantic/Nynex merger AND the Southwestern Bell/Pacific Bell Telesis mergers have been approved by everyone all around at this point. Bell Atlantic had to agree to a headquarters building in New York and some quality of service guarantees. But these are generally done deals creating enormous communications companies—as clueless as ever, but a lot bigger.

Sprint has partnered with everyone on their Global One project, but there are rumors and rumors of rumors regarding possible marriages to companies as far away as Japan's NTT.

The most active area seems to be hardware companies. This is driven by two basic factors. First, there is a legitimate desire by almost everyone from the corporate suite to the smallest ISP to rationalize the equipment room. Currently, you buy a remote access server from one vendor, a router from another, an ATM switch from a third, and web server hardware from a fourth. The overhead of learning to configure and operate all this equipment has become a singularly annoying expense in time, effort, and money for almost everyone. The desire to buy all equipment from a single vendor, even if it's not precisely the best at all tasks, grows as some of these companies smarten up with single operating system interfaces to bring it all together. Networking just shouldn't be this damn hard.

The second factor is a little simpler: Get Cisco. This company has done perhaps the best job of building a unified product line, though in truth that is a bit short of glowing praise.

The earliest sign of all this was a marriage between Synoptics and Wellfleet to form Bay Networks. Synoptics did a lot of networking hardware, and Wellfleet did a serviceable router that simply lost to Cisco in the marketplace. These two companies married with no other mission in mind than to try to combine forces and get Cisco. Since they were similar, and it was a more or less equal partnership, this strategy has been plagued by internal reorganization to try to deal with some of the redundancy. But with equal representation from both companies on the board, it has been a struggle. Some of the equipment coming out of this is actually looking pretty good, but the company has gone through some painful things internally.

The basic confrontation between Asynchronous Transfer Mode (ATM) switching versus IP routing has lead to an utterly perplexing situation. At the backbone or core level, ATM won—period. But the network is based on Internet Protocol routes. Last year, Cisco bought one of the leading ATM switch companies—StrataCom—in a $4 billion deal. I thought it odd at the time in that Cascade seemed to be the ATM switch of choice among the larger Internet backbone operators—with a sprinkling of Fore Systems products showing up here and there. But it did give Cisco a solid entry into ATM.

3COM, founded by Bob Metcalfe who literally invented Ethernet or the greater part of it, has been to some degree sidelined. Last month the company announced a $6 billion merger with US Robotics whereby each US Robotics shareholder (NASDAQ: USRX - currently $55) gets 1.75 shares of 3COM stock (NASDAQ: COMS - currently $31). Again, no hostile takeover. Everybody in both companies is just grinning ear to ear. Despite valiant attempts among everyone else to build industry unity around a K56flex standard, US Robotics is emerging as a marketing power to behold—some 2,100 VARS selling their higher-end remote access stuff and raw brawny dominance in the retail channel selling inexpensive modems. X2 is still looking good. Since 3COM was actually a member of the K56flex alliance, a number of K56 smallfries were giggling hysterically that it was the death of x2. Right. Note first that none of the big boys in this business are prone to giggling. Perhaps surviving a sufficient number of spring fashions in comm technology sours the giggle. 3COM thinks x2 is very cool. Combined with their gigabit Ethernet line, it's all very cool.

Now Ascend has gone shopping in a pretty big way. Cascade. Ascend is actually a relatively small player with perhaps $550 million in annual sales. They really have carved a niche in a new arena they near enough invented—remote access servers. They took analog modems, ISDN terminal adapters, and routers and put them all in a single box. You plug a 1.544 Mbps T-1 line to the Internet backbone in one port, and two or three PRI ISDN trunks in some others. Callers can dial in with a pretty flexible mixture of analog modems or ISDN adapters, and this single box pretty much handles connecting them to the Internet—wiping out the normal CSU/DSUs, routers, terminal servers, and banks of modems and ISDN adapters with one neat little box.

But they didn't have a big router to go against Cisco. Last year they bought NetStar. NetStar had a kind of fascinating device they termed a *GigaSwitch*. It had no backplane. The entire switch was in silicon. And it could spew forth packets in prodigious quantities with grave haste in about sixteen varying directions. Ascend bought the company, relabeled the router *GRF 400*, and has done somewhat well with it in the interim.

This month, Ascend (NASDAQ:ASND) announced they were acquiring Cascade Corporation (NASDAQ: CSCC). The stock price of both companies fell but Ascend's dropped $12 to about $40 almost immediately. I'm not sure I comprendo Wall Street's thinking here. Cascade appears to be the dominant ATM switch maker in the business. Though there is some earnings dilution, it gives Ascend a mighty big ATM stick to wave around.

So they now have remote access servers, (which they more or less invented,) routers, and ATM switches. If they wanted consumer modems, and they probably don't, Microcom would be my choice but Hayes is probably cheaper, and they've already hedged both K56flex and x2 with THEIR purchase last month of Cardinal Technologies.

Although everyone is snapping up smaller fry technology companies as well, Cisco just bought a nice little xDSL company named *Telesend* on the side, much of the same puzzlement comes to the fore in this industry segment. It looks like we are moving toward three or four big networking hardware companies—Cisco, 3COM, Ascend, and Bay Networks. But the technology is still not terribly mature. We're also seeing a wave of smaller companies such as Access Beyond, Livingston, and others rolling out remote access servers at half the port price of the big guys. Livingston has barely $50 million in annual sales and isn't even publicly traded. But their Portmaster3 is causing very favorable mumbles among the rank and file ISPs for performance, a terribly generous K56flex upgrade policy, and per-port pricing. So even in hardware the concept of consolidation doesn't make a lot of sense to me when the technology is sufficiently immature that a small company can come steal a march on a product line segment simply by rolling out the next generation a little cheaper and a little quicker.

Finally, Compaq Computer has announced they are acquiring modem manufacturer Microcom. Microcom makes a remote access server titled the *ISPorte*—along with desktop modems.

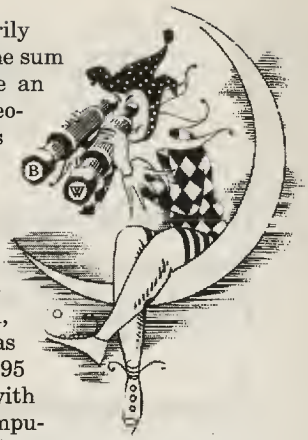
There is another little problem with all of these acquisitions. Companies have cultures, and they are made up of people as well as technology. When a $5 billion company buys up a $90 million company, they basically mow it to the ground. They can use the people. They can use the technology. Sometimes the ferns even work in certain office configurations. The Borg pattern.

SOMETIMES two larger companies can marry, as long as it is clear who is buying who, who's running the ship, and assuming compatible cultures and technologies. The Cisco/StrataCom merger was broadly among equals, but Cisco was the purchaser, and StrataCom was physically located less than a forty-minute drive away (thirty minutes for native Californians). There was already some co-mingling of body fluids among employees that moved between the two companies.

But when you don't have a clear order of who is buying who, the Board of Directors now looks like a fifth-grade dance with the boys on one side of the room and the girls on the other, and oddly enough, particularly when you combine East Coast companies with West Coast companies, it is very easy to get mired down in cultural differences and procedural items. On the East Coast, they dress down on Fridays. On the West Coast, they either don't go in at all on Fridays, or in many cases they are working 20 hours a day, seven days a week, and nobody knows precisely what a Friday is or what you might do with one if there was one in the room with you making bonafide and officially sanctioned Friday noises. At some companies, the concept of "in" versus "not in" is a little vague. And dressing down is a little tough when you've never dressed up. I suppose you could look up the photo of the CEO taken on the day he buried his mother to get a fashion hint, but it's a lot of bother.

On the East Coast, they give people salaries. On the West Coast, all employees are issued five dollars in quarters each morning for the soda machine and the stock ticker dutifully scrolls across the bottom of all terminals in the facility to indicate whether they are in the money or not. Everyone is paid in company script termed "common stock."

The point is, all mergers do not necessarily result in the whole being greater than the sum of the parts. Sometimes, you just have an awful lot of confused and redundant people wandering around separate halls together.



This week rumors emerged of an AOL purchase of CompuServe. We don't know at this point if this will happen or not. Both companies are in total disarray internally, troops are demoralized, and it looks like their day in the sun has passed. AOL of course bit into the $19.95 all you can eat Internet access game with woefully too few ports to survive it. CompuServe spent over a hundred million on Spry as their entre into the Internet access world, spewed forth another hundred million rolling out their WOW! service (Internet for the kids?) and immediately shutting that down. They are in the MIDDLE of an IPO. This has to be a Wall Street first. They sort of did one, but H&R Block kept back 80 percent of the stock, intending to send it onto the market later. Later never came. Think of it as a semi-stalled IPO. You can buy some in the hopes it goes up, and if it does, they'll dump theirs—ensuring unlimited downside potential and guaranteeing no possible upside in this life.

The architectures aren't precisely compatible. But it does make a kind of pathetic sense in a way. In my last editorial I rather noted that I couldn't conceive of a strategy wherein AOL could dig their way out of the port mess. Nobody can make 600,000 modems in the time frame in which they need them. If they could, nobody could deploy them. If they could make them and could deploy them, the telcos can't spew that much copper in any timely fashion. They were calling around trying to figure out a way to co-opt ISPs into being their partners to provide dial-up access. I think it was one of those deals where the ISPs would provide the ports, and AOL would keep the money. What an industry...

But as it turns out, CompuServe probably has 540,000 or so dial-up ports already on line along with a good global reach and a shiny new U.S. Internet backbone (30 Cascade ATM switches as I recall)—lacking only a clue from actually being in the networking business. They appear to be real willing to be sold.

And finally, Larry Ellison of Oracle is now making noises that he might just bite on the Apple of the tree of the knowledge of good and evil and get his butt thrown out of the garden. I just can't help it. December 1994 issue of ***Boardwatch Magazine:*** "Apple Computer Corporation has 36 months to live—they'll be bought or go bankrupt within three years. Ready, begin." At the time Apple was doing very nicely financially. We were instantly vilified and reviled by the Macintosh community and even the Windozers noted that I had "gone too far this time."

We're now down to seven months, Apple is spewing forth a billion a quarter in red ink into some very fancy fern bedecked office digs hoping a Newton (which ironically still doesn't do calculus actually) will somehow save them. And Larry Ellison wants to buy them. And he's already noted that he's NOT going to make Steve Jobs CEO??

Looming over this all is of course BillGatus of Borg. BillGatus has a $9 billion cash war chest, one of the hottest and most persistently climbing stocks on Wall Street, 15,000 fervently cultish troopers willing to climb onto the flying saucer on a moment's notice, and a visceral desire to own all that he surveys with a reach, a grasp, and a hubris exceeding all that is mortal. Most dangerous of all, he has something we should all have—the utter certainty and deeply religious conviction that in this business, one wrong move, or one right move not made, and he's dead. ◆

Editor Rotundus,

Jack Rickard



LETTERS TO THE EDITOR

Address correspondence to Letters to the Editor, *Boardwatch Magazine*, 8500 West Bowles Ave., Suite 210, Littleton, CO 80123; by fax to (303)933-2939 or by e-mail to letters@boardwatch.com

CAN YOU HELP ME?

Jack, I'm sure you can help me and I would be very grateful if you could. I was pointed your way by Bruce Sterling as the person who's opinions he most respects on the topic of the future of the Internet.

I am a student at the DeMontfort University In Leicester, England. I am a studying a degree in Multimedia Design an have been working on a project that involves research into the history and the future of the Internet. I have just about completed researching its history, but I still require a few expert opinions on its future, to ad to my own, and this is where you would be a valuable contributor. I have read some of the editorials on your web page but the two questions I need answers to are

1) How do see the use of Internet developing over the next few years?

2) How far can u see the development of VRML going (and it use within the Internet) within the next 2 years.

A few words that I could quote in my report would be fantastic.

Actually having read some your editorials it seems you could help me to find a few details on the current number of host connected to, and users of , the Internet there actually are. If you could send me, or point me in the direction of, some figures I would be very grateful.

Thank you very much for your time,

Morgan Davies
scsc@ukonline.co.uk

Morgan:

*We've more or less retired from the numbers business regarding the Internet as a whole. But Mark Lottor has been the most reliable source of the numbers of hosts on the Internet (***http://www.nw.com***) We think there are about 1.75 humanoids per host computer on the network. You can get his latest host counts at his web site.*

As to where the Internet is going, I'm not certain I can be of much help either. It has reached sufficient critical mass that it is "going" in all directions at once. I suppose the heart of the question is where it is going productively.

At the heart of the network, there is a lot of energy, money, and talent thrown at deploying useful bandwidth to the desktop. This deployment has actually been blocked by those most able to deploy it—the local telcos. The problem has reached such a juncture that it will basically cause the disassembly of local telephone service in the monolithic form we know it today. This is going to be painful for almost everyone, and I cannot even say that I think our fairly excellent voice network is not going to suffer in the process. But bypassing the local telco will give way to actually competing with local telcos in coming months and years. The far side of this is a world of telecom options. Much like the breakup of the long distance service monopoly in 1984, it will lead to better service, more options, and lower prices —but at the cost of a real and genuinely annoying increase in complexity and a need for buyers to truly beware.

An example: US West sent me a long distance calling card the other day. This caught my attention in that they are a local provider, and technically still barred from offering long distance calling cards. It had an attractive card design, and a brochure etc. that came with it that promised the best pricing, the best service, the most universal acceptance, etc.., ad nauseum.

Since we already have a pocketful of these, I fortunately set it aside. Unfortunately, a dear friend of mine gave hers to her daughter. How would you feel about a ONE MINUTE call from Denver to Palo Alto at a rate of $4.66? Or an eleven minute call to Palo Alto at $11.32? Or a one minute IN STATE call through US West itself at 44 cents?

Most of us would call this blatant fraud. But it probably isn't. It's just their reliance on OUR perception of long distance telephone cards as being cheap and ubiquitous, combined with a natural trust in the local telco (which defies all reason but remains true). It's true they never noted that they intended to surcharge the card over ten times the going rate for long distance service. But they never said they WOULDN'T either. And ultimately the damage this card will cause THEM far exceeds the eighty dollars my friend paid to drive a stake through the heart of this card scam forever. They will make a lifelong enemy of anyone who actually uses the card, or knows someone who uses the card. Very poor strategy going into a competitive world of telephone services.

But I do digress. The point is that contrary to the popular perception that the local telcos are going to take over the delivery of the Internet, we still have to wire around them in order to have an Internet.

I was excited by VRML initially. But it is a bit hard to create sites with—the con-

struction tools will have to improve much for this to be useful. Worse, it leads to rather lengthy delays for the "world" to download and appear on your screen. I think it will develop a niche in enhanced games and chat services online, and be reasonably popular there. But we must complete the bandwidth deployment before it becomes useful for the presentation of information.

Similarly video. This one bites me over and over. There are some very exciting things that could be done with this, and none of it has to do with sex or "television channels" over the Internet. But it is a serious bandwidth hog. Both of these technologies are fun to play with, but the average user bores from waiting for things to happen.

So in the near term, I see a couple of hot areas. First, a plug for my own favorite Internet application—electronic mail. This is old, not new, plain, not sexy, and so it gets no press. But it is really the killer application of the network. And it isn't over. It has been a useful channel for the technoids, but it is gaining sufficient critical mass in the general population that it will be truly useful. And I don't think the GOOD e-mail program has been written yet actually.

Web commerce is taking on some exciting aspects. Again, most didn't know that buying things over the Internet just didn't work very well because so many were claiming it did when it didn't. And so the news that it now DOES work is a little lost on them. But online buyers have overcome their initial hesitancy over this. I personally delight in entering "Penfold's Grange" in a search engine and getting a listing of everywhere this wine is available in the world. Unfortunately, not many. And therein lies a recurring rub. Many of these services are listing products they don't actually have for sale. Too often, the web page and the inventory database are primarily connected by a pair of hands that form HTML pages manually.

This sounds quaint, but understand that this changes life on the planet. Let me run an example by here. Clarion makes stereo equipment for cars of course, but also a color LCD display and camera and so forth for RV rear view systems. They have a lovely web site, where you can order nothing. They try to refer you to one of their "dealers" near you. This is clueless beyond the ken. I'm on their web site, with Master Card akimbo, and they want me to go away. The reason is a large network of middlemen that they went to some trouble to get to carry their products. But as the Web matures, they're extra baggage. I want to go to Clarion and order the parts. Some other vendor will figure this out, and steal a lunch on this company in rather short order. But it collapses the distribution systems of the world, and eliminates millions of middle-men from the process.

Whenever I describe this, I get some variation on the necessity of the "shopping experience." Balderdash. It would have to be a very different shopping experience than I've been getting here in the Denver area.

And it will work for almost everything from pizza to large diesel rigs. A local car dealership put up a web site with the intent of luring people into their show rooms. They're doing 50 cars a month now directly over the web — many of them are people BUYING a car on a CREDIT CARD. As it turns out, a LOT of us don't really have any fascination with the "buying experience" of spending three hours talking to a moron about what his "manager will go for" on an asphalt prairie full of cars.

It is currently in vogue to pooh-pooh push services. Actually, I'm a PointCast junkie, and I think when the Wall Street Journal and CNN finally get something up, we will find this alters the way we get news. I'll get news about what I'm interested in, when I want it, without logging onto anything.

In a related area, there are 78 million baby boomers born between 1946 and 1964. They already bought the house, raised the kids, are selling the house, and realize Social Security is yet another government scam to bilk those who produce out of some portion of their stuff. They're in their peak earning years now, and have no intention of retiring on a small pension that may not be there. They want to live long and live well. As a result, the amount of money pouring into mutual funds right now is just unfathomable. The main topic of discussion for the rest of this century and into the next will be about your "portfolio." The Internet is going to take over first the flow of information about investments of all kinds, and ultimately the trades themselves. A web site titled ETRADE (`www.etrade.com`) is already making most of the brokerage world look stupid. This one company on one web site has already taken in some $500 million in investment funds from some very active traders. I think financial software, services, newsletters, and so forth are going to go absolutely crazy on the Internet over the next five years. It will entirely alter the very nature of money and investment worldwide.

Finally, and somewhat farther out, once the bandwidth bottlenecks are ironed out, all voice, video, data and other communications will all route through the Internet cloud. The current circuit switched network will disappear entirely.

So in summary, I think the Internet is going to dramatically change:

1. *Telecommunications infrastructure*
2. *Distribution systems of all kinds by entirely flattening distribution worldwide.*
3. *Centralized news distribution systems*
4. *All financial markets and investment/trading scenarios.*

This may be a bit more than you asked. But there it is.

Give my best to Bruce Sterling. He's a rather noted science fiction author in the online community.

Regards;

Jack Rickard

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TELCO TROUBLE IN AUSTRALIA

Jack:

I have just received my copy of the latest ***Boardwatch Magazine*** and read with interest you opening comments on Telcos and timed local calls in the USA.

The Australian Govt. in their infinite wisdom (why is it that politicians think that they are wise), have allowed Telstra, our only telco as of writing, to

put in a bill, that has passed the senate, for timed local calls on data/modems only. This is discriminatory, but wait its even worse in that the caller is not charged, but the ISP is. This is due to the difficulty of telling whether the caller is sending data or voice.

Being that I am a small (60 member) and a non profit making ISP, this is going to KILL me and probably 90% of ISP's, so it has the possibility to destroy the Internet for most Australians. The cost talks are about 10 cents per minute, but this is not set in concrete.

There is a petition being signed at `www.ozlink.net`, but I am not holding my breathe knowing the Prime Ministers lack of knowledge regarding the Internet and what it is, plus him being and obdurate individual too.

I have read with interest your comments in regard to the shortsightedness and technical reasons why the excuse of 'the data calls are overloading the switching gear' is a bloody lot of bullshit. I was wondering if I could prevail upon your good offices to give me some pointers in a non computer/technical language that a 'politician could understand, so long as he has a dictionary handy.

We have to do something FAST here as it goes back to the house of REPs in May, little lead time and nothing in the Press either its almost being done by stealth.

Oh yes! Telstra is also an ISP, trying to sell connection via 'Big Pond' www.telstra.com.au..... What conflict of interests ??

Anything you can do to help out with this big stick approach would be gratefully received 'like manna from heaven' <g>.

Regards

Keith Antoine
`kantoine@eastwind.com.au`
18 Arkana St |
The Gap
Queensland 4061
Australia

Keith:

I've been a technical writer now for some twenty years—the last ten of it specializing in communications issues and of course ***Boardwatch Magazine****. I take some pride in the fact that I can absorb and assimilate technical information at literally any level in almost any technology area, and present it in a readable form. With no false modesty, I really am one of the best at this there is. But as I understand it, you want me to do this for POLITICIANS? I'm flattered, but probably inadequate to the task.*

We have a similar problem here. Producing studies under the aegis of Nobel Laureate employees of the phone company, pointing out that Internet access is overburdening the voice network, is burgeoning into a cottage industry here in the United States as well. These are so transparently self-serving and so childishly one sided that the label of "study" must be an embarrassment to anyone who's name actually appears on them. They are probably persuasive enough for the political mind. But they illustrate the RBOC mind share at its worst.

When writing, audience is everything. It can be fiendishly difficult to persuade a dog to eat hay, or a cow to eat beef. Fortunately, there is an area where politicians are actually in most cases stunningly astute. That is counting votes. I would advise you to find out who the REAL politicos are that advise the Prime Minister of such matters and develop a list of them and their full contact information. You should then report this as widely as possible among your users, other ISPs, their users, etc. noting the specifics of the proposed law or regulation, and its impact on their Internet access. Be factual, not shrill. Lay it out, make it known, and point them to the people who can change it. Don't over-urge what they should do. Concentrate on conveying where, if they choose to make their voices heard, it would do the most good.

Overcoming the forces of concentrated, focused greed can be a task. But it's not impossible. If enough Internauts in Australia want access at a reasonable cost (a loaded question, I happen to know they do), you will prevail.

Jack Rickard

INTERNIC

Jack,

This may already be old news, but I thought I would pass along some information that might be of interest to you and perhaps your readers as well. As the owner of a small ISP in Connecticut (Paradigm Communications, Inc.) it is often necessary for me to deal with the InterNIC. Up until recently, it has not been too time-consuming or difficult if I did my end of things right.

Over the last 2 month, however, I have run into multiple cases of customers being threatened to have their domains shut off by the InterNIC for non-payment when in fact the customers could prove payment with canceled checks. While I've always liked to rally for the little guy, I found I had not the time to help these customers as these were not issues involving me as their provider.

Now I have become one of those people threatened by the InterNIC. Below is a copy of the email I sent to them in response to their claims. I think that this might necessitate some sort of class action suit if it is occurring on as grand a scale as I suspect.

Randy Sigman
President, PCNet
`rsigman@pcnet.com`

Randy:

First, it is happening so widely that I personally suspect a gross technical failure of NSI's billing database. I'm not sure they didn't lose most of it. It's not just widespread, it appears to be ubiquitous.

I publicly advocated the NSI move to charge $50 for domain names. They were doing such an egregiously poor job of registering domain names that it threatened viability of the network. In some instances, prospective sites were waiting for two to three MONTHS to get a name active. My position was that if charging $50 can improve the system sufficiently to reduce that to three days, it would be well worth it. And it might cut down the cottage industry of registering gratuitous names as a ploy to blackmail trademark owners or mark out future turf not currently needed.

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It worked. As I understand it, NSI is generating $60 million per year in domain name registration revenues. We receive no written correspondence from NSI whatsoever—electronic mail invoices only. UNSAT. And this may be a contributing reason payments aren't precisely matched to invoices.

I can tell you that if our domain name was deactivated, they wouldn't hear a complaint from me at all. They might get a clue when the subpoena was served. I guess they ARE deactivating domain names. I just got an e-mail message indicating that they have shutoff the OLA.ORG domain. OLA stands for Ontario Legislative Assembly. Yes, they have unplugged the Ontario legislature between March 30 and April 4 over a $50 invoice. Here's the printout.

[rs.internic.net]
Ontario Legislative Assembly (OLA-DOM)
Room 2311,
91 Wellesley St West
Queen's Park
Toronto, ON
Canada M7A 1A2

Domain Name: OLA.ORG
Domain Status: On Hold

Administrative Contact:
Cowieson, Bob (BC35) bobc@OLA.ORG
(416) 325-3789
Technical Contact, Zone Contact:
Levin, Vitaly (VL2) vitaly@OLA.ORG
(416) 325-3570

Record last updated on 30-Mar-97.
Record created on 07-Oct-93.

Domain servers in listed order:

NS.UUNET.CA 142.77.1.1
NS.UU.NET 137.39.1.3

I'm rather hoping they do something similar to FCC.GOV to hasten the process.

In this issue, Thom Stark, a new columnist joining ***Boardwatch****, describes what is happening with domain name registrations, alternate domains, etc. I think you'll find the article interesting.*

My question for you is that if your customer's domain name registration is not an issue involving you as a provider, what precisely IS? And now that it involves you personally, you are finally outraged?

Every man for himself I suppose?

Jack Rickard

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INTERNET ARCHITECTURE ARTICLE

Jack:

I found your article on "Internet Architecture" in the recent ***Boardwatch Magazine Directory*** to be the clearest explanation of Internet infrastructure that I have seen to date.

I am a law professor engaged in a research project for an international organization on the international tax implications of electronic commerce. In order to consider those implications, a good understanding of the Internet architecture is a must. There are plenty of folks out there espousing legal conclusions about the Internet without understanding what actually goes on. I do not want to join those ranks.

After reading your article, a colleague and I, had some follow-up questions about Internet architecture and the economic relationships among the participants (e.g., peering arrangements). Would it be possible for us to call you and ask our questions?

Two of our questions are as follows:

1) Whose physical lines traverse the country and form the Internet backbone in this country. That is, of the 20+ companies that can be considered national backbone providers, do any of them actually own their own lines or do they all lease the lines from the telecomm companies? If so, which companies have the cross-country lines? AT&T, MCI, SPRINT, Others?

2) When the backbone providers enter into peering agreements, do they charge each other? What do they do if the data traffic is not balanced (e.g., A sends more traffic on B's network than B sends on A's?

We also have some questions about international aspects of the Internet and about the use of satellites.

Richard L. Doernberg
Emory University School of Law
Atlanta, GA 30322
Phone: 404 727 6836
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Email: lawrld@law.emory.edu
Web Page: **http://**www.law.emory.edu/~lawrld

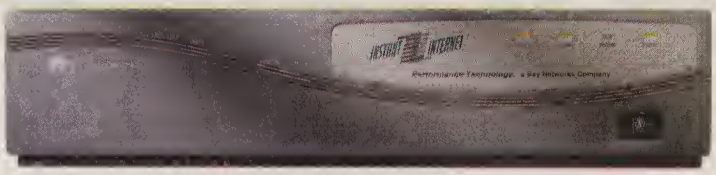
Richard:

It is true that there is no shortage of lawyers and legislators espousing theories without a clear understanding of what's going on. But in all fairness, there's plenty of people in the industry doing the same, and some of the issues are both complex and graven in jello.

Your question about physical lines provides a good example. Broadly, the Internet exists in a number of layers. The logical layer consists of physical switching devices—usually some combination of routers and ATM switches, located in cities, that are logically connected to each other in a national web. These devices and the corresponding logical web comprise a "backbone" or "mesh."

How a specific port on a specific device in a specific city is connected to another port on another device in another city moves us into the physical layer. Conceptually, this is a leased data-grade line between the two cities, leased from a major long distance telephone carrier. In practice, it might actually be TWO leased-lines, from two DIFFERENT carriers, a satellite link, or some combination. This provides increased bandwidth and redundancy.

The major carriers are of course AT&T, MCI, and Sprint. But actually most of it has been done by WorldCom. A company named WilTel devised a cunning method of shooting fiber lines down natural gas pipelines a few years ago. They were acquired by WorldCom. They have offered leased point-to-point connections to networking companies at such a price differential from the major carriers that they have virtually taken over this market. The Sprint, MCI, and now AT&T



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Internet backbones MOSTLY use their own lines, but even that is not as pure as you might imagine.

But wait, it gets worse. In our most recent directory, we profile some 27 backbone providers. I would say that two thirds use VERY few leased point-to-point connections at all. WorldCom has built a reasonably awesome Asynchronous Transfer Mode (ATM) full-mesh network. It is now possible to lease a Private Virtual Circuit or PVC linking two points in two different cities for a fraction of the cost of a true point-to-point leased-line. This introduces a further layer of abstraction. We nearly segregated these backbones as not "really" having point-to-point connections, but rather piggybacking on another ATM backbone segment to form theirs.

The problem is in "real" point-to-point connections. Increasingly, these are not physical lines either, but PVCs on Synchronous Optical Network (SONET) webs operated by the long distance carriers. So nothing is "real" anymore in the sense of a piece of copper trailing along the ditch down an Interstate highway. They are fiber lines carrying gigabits of data of all kinds, from entirely different companies, in multiple layers of resale and aggregation that becomes a bit hopeless to envision.

We rather simplify this with our logical backbone maps. And I can say that physical layer is obtained via cash from long distance carriers—WorldCom being the largest with regards to servicing Internet backbone companies.

With regards to your peering question, this is normally discussed as TWO elements: peering and settlements. Peering is simply agreeing to exchange traffic. Settlement is the concept of tracking usage and making payments according to the traffic.

Peering is the dark secret of the Internet. In theory, if you appear at one of the four official network access points or NAPS defined by the National Science Foundation contract, you are "connected" to the Internet. Unfortunately, NSF weaselworded the peering function. So you can physically have a link to a NAP, and not be connected to anything in a real sense until someone else at the NAP agrees to peer with you. Peering is an agreement to exchange data packets with another backbone operator. The simple view of this is that this is used to form a "good old boys club" that peer, and any new bodies that want to be backbone operators should really be "customers" not peers. In reality, it is somewhat more complex than that. Unfortunately, the IP technology pretty much dictates that an agreement to peer is an agreement to comingle body fluids. If you agree to peer with someone, you have pretty much given them the power to wreck your network pretty badly if they are a dufus. So most of the backbone operators require presence in all four NAPs now, a 24x7 Network Operations Center, a defined trouble ticket escalation program, and some demonstrated technical expertise in the NOC.

At this point, I don't know of ANY settlements going on in the Internet at all. It might be possible that two carriers have some sort of agreement on this that isn't publicly known. But to my knowledge, nobody is paying for peering, or doing any form of traffic settlement in a pure sense. If you need to use another backbone to transit packets from your location to a third backbone that you DON'T peer with directly, there is the concept of purchasing TRANSIT across the intermediary backbone. There is some of that going on—usually at some flat rate. But traffic settlements between two peers are at this point unknown. There actually is not much in the way of technical tools to even accomplish this. And there are some conceptual problems here.

If I operate a web site on backbone A, and my 100,000 readers are all dial-up users on backbone B, how does this go exactly? They're sending very small numbers of packets requesting pages, I'm sending them huge pages with graphics. Should backbone A pay backbone B for the huge graphic pages going from my web site to the dial-up users, or should B pay A for the huge pages being "consumed" by their dial-up users? We don't have call "originators" and "receivers" after the fashion of voice communications and there's not a way to even conceptually agree on who gets value from what. It's a cloud, not a circuit switched network.

You may of course feel free to call about International Internet connections and satellite links. But as you may note from this printed response, I'm prone to answer rather beyond what may be asked, and I make a lot of this stuff up as I go.

Jack Rickard

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EARTHWATCH WEATHER

Jack,

I've been bouncing around the net trying to find a way to get the word out to ISPs about our weather web pages. One of the ISPs (Bill Dunn—Vision Communications) that is using our images suggested that I contact you for advice. I hope you don't mind the inquiry as it is apparent from your website that you know the business very well. I've always believed in going to the person that is best suited to solve a problem and I think you're the one.

At EarthWatch, we produce a unique 3D weather website <**http://www.earthwatch.com**> that is provided free of charge to the Internet community. Here's a partial list of what's available on our website:

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specials. Our software is installed in over 200 TV stations around the world.

As webmaster for EarthWatch, I'm trying to increase our traffic and our name awareness. I'm hoping you can give me some ideas on how to get the word out to ISPs that they are welcome to use our web pages as their source for weather information. We use a WebFORCE Indy from SGI as our webserver and have a T1 line to our ISP (MRNet). Our current daily averages are 5,445 unique visitors, 21,287 impressions and 141,394 raw hits. We see up to a five-fold increase in traffic when there is an outbreak of severe weather, especially during hurricane season. We are continually enhancing our site with new graphics and coverage areas. I hope you'll stop by for a look.

Your thoughts and ideas will be greatly appreciated.

Sincerely,

Dave Anderson - Director of MIS
davea@earthwatch.com
Webmaster of http://www.earthwatch.com/
EarthWatch Communications, Inc.
17113 Minnetonka Blvd., Suite 120
Minnetonka, MN 55345
Ph (612)476-9005 x225
Fax (612)476-9010

Dave:

Sure, everybody talks about it. But are you DOING anything about it?

First, if you have 150 new graphic images per hour, and want 3,800 ISPs to put up a pointer to your page, your T-1 is going to prove to be a bit weeny in the long run don't you think?

I love weather, and genuinely enjoy web sites such as yours with satellite images and so forth. We've done weather stories for years dating back to 2400 bps dial-up services that provided such maps. I'll publish your letter and perhaps some Internet service providers will deign read it.

As to getting the word out further to ISPs, we do publish a magazine with advertising in it. But you might find the Internet Service Provider Convention (ISPCON '97) a bit more useful in that you could actually interact with ISPs face-to-face and not only get the word out, but get the word in as well—get some feedback FROM the ISPs. It is the largest gathering of ISPs anywhere and they come from over 40 countries. It's scheduled for August 20th-23rd in San Francisco.

More information on attending or exhibiting at this event is available from **http://www.ispcon.com.**

Love your domain name;

Jack Rickard

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WOULD AOL GET BETTER USER/MODEM RATIO?

Jack:

On 4/7/97, the *Wall Street Journal* writes that an AOL takeover of CIS. "...would create an on-line juggernaut with control of more than half of all on-line customers and could blunt the threat of newer entrants AT&T Corp. and Microsoft Corp."

It seems to me that AOL needs more ports, not more customers. To your knowledge, would this move significantly improve AOL's score on the Jack Rickard all-important user-to-modem scale?

curt.tucker@mci.com

Curt:

It looks to me like it would. I stated in a recent editorial that I thought AOL's move to flat rate pricing was fatal, and couldn't think of a strategy as to how they could crawl out of this mire. Fortunately for AOL shareholders, they appear to have come up with one.

Note that these guys lie about nearly everything, so truthful numbers are tough to generate at this level. But I guess I believe AOL had about 8 million at least occasional users when this began, and roughly 260,000 modems. I guess I think CompuServe, if you avoid counting some overseas services that are kindof sortof affiliated, currently has 2.5 million users. I'm told CompuServe has 540,000 modems which I don't quite buy into, and a superb global network footprint, which I guess I do buy into.

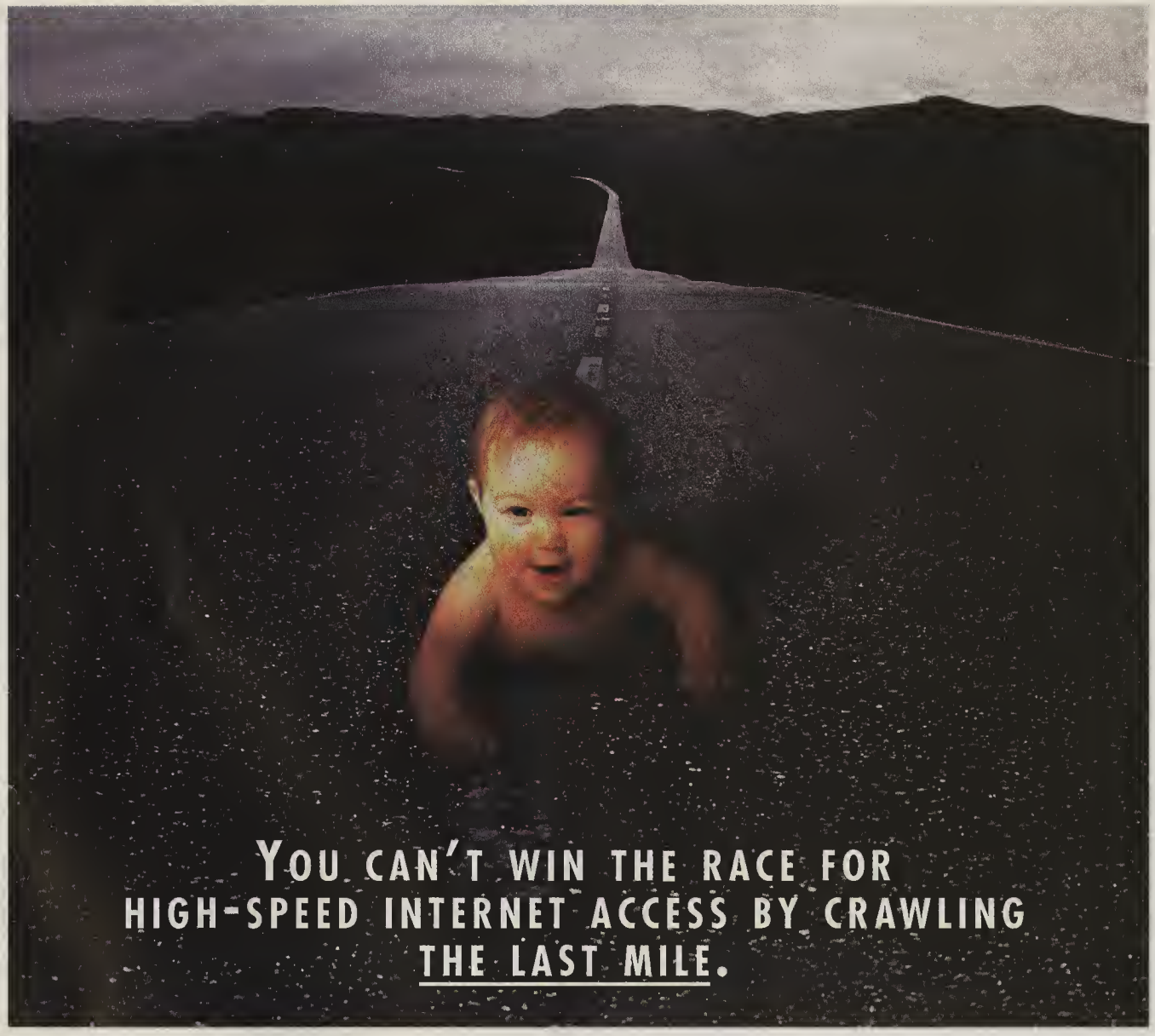
If you take the 8 million alleged AOLians, and 2.5 million CompuSerfs, you get about 8 million to my way of thinking. First, there is some overlap between the two subscriber bases. Second, both are losing users right now at a pretty prodigious rate. AOL I understand has leased some 50,000 ports at a fairly ridiculous price bringing them to 310,000 ports. Add 540,000 CIS ports and you have about 850,000 ports. On the not-really-invented-by-Jack-Rickard-but-nonetheless-pretty-damned-important-user-to-modem scale, they are probably in the 10:1 range with an acquisition of CompuServe.

This assumes a great deal. First, it assumes that the networks and technologies are sufficiently compatible to get them hooked up and married and working in a time frame still in the realm where anybody would care. Second, the market seems to value CompuServe at about a billion dollars. AOL doesn't have a billion dollars. And it has no handy place to get a billion dollars. And a billion dollars for a half million ports works out to $2,000 per port—pricey if your only interest is in ports. But it eliminates some of AOL's competition, gives them a second service of content, and potentially some new users. It also establishes them as the largest of the breed. And finally, CompuServe actually has some great networking customers such as VISA and other banking interests. All those little card swipers actually work over CompuServe's network.

But the only way I can see AOL getting CompuServe is by offering HR Block stock in AOL. HRB still owns 80 percent of the equity in CompuServe. Now why would HRB want stock in an online service with more problems than the online service they're already struggling with? And of course, they would have less control. It might still be possible for AOL to get financing to swing the deal in cash. And HR Block is a pretty motivated seller I suspect at this point so the price could be somewhat less than the market valuation.

It wouldn't by itself make them into a winner I fear. But it would keep them in the game—and with the largest single block of humanoids online.

Jack Rickard



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HELP

My name is Giancarlo Marchetti, I'm 38 years old and i live near Bologna, in ITALY. My life is at the horn of a dilemma ..... but go in sequence.

In 1980 i start works as teacher in memory and speed learning course. The company works with multilevel marketing system, and, for 3 years i was the first, or second salesman every month. i was the first Italian teacher in memory course.

After 3 year i saw that these work cannot go away, and after a little time for looking around i start, (with a good friend) a company which sell book first and PC after. Business go well until 1991. A divorce (I have a baby), and the business crises put me out in 1994.

In 1992, with a big know-how, i start as consultant in telemarketing, teleselling, and salesman hunting. What can i do? I was old for go into company (yes, in Italy after 30 year, no company want you) and i was young to die. In 1995, selling all my all property, i pay all debt and i remain only with some drawers. In 1994-1995 i had only one god and big customers: he go into bankruptcy at the first month of 1996 because CEO escape with 15 million dollars: the cash of the company. From then, all my research to find work go into nothing. I'm also a discrete electrician, and i know electronics (as hobby and as work), i have also experiences in medical device like electrotherapy, magnetotherapy and iontophoresis: but there's no work for me, I'm old for all companies and i have no money to start my another company. i don't know if this is because the crises in Italy is very big, or because i become incompetent in a few seconds, or because my horoscope is negative, but my life is at the horn of a dilemma (remember?): i can stop eat (but my baby?), i can go down from a very high bridge, or i can become a criminal, or i MUST become an homeless.

I DON'T WANT IT !!! No one of that way is good for me. I WANT WORK and restart. And that is the reason of this message. PLEASE HELP ME !!! I can work everywere in the world (oops i speak only english and not good), can work in italy in some market ..... please think if you have a way to put me out of this mud.

If you want to send me some help (idea, thing, or money (I'm blushing for shame...for this) You can send to

GIANCARLO MARCHETTI
CASELLA POSTALE 66
40068 SAN LAZZARO DI SAVENA (BO)
ITALY

This is my ultimate hope. Until June 97 i have a Internet account, and so, if you want some information or want to speak with me please E-mail to: `oriomed@mbox.vol.it`

All that you want to give me as help shall be very pleasant. Thank you very much.

Giancarlo

Giancarlo:

Some days are certainly better than others. Oh, well, hell—come ahead to Denver. I guess we can always use another copy editor here at ***Boardwatch****. And I guess an Italian multilevel marketing guru would qualify.*

Jack Rickard

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XDSL

Dear Jack:

It is a relief to finally have an pretext for writing for reasons other than slobbering all over you like a grateful pet. I have ADSL service but, unfortunately, have learned no "magic words."

Bell Atlantic is conducting a "market trial" of ADSL service in about three dozen prefix code areas of Fairfax County, Va. Among their strategies is to offering a pretty nifty offer to heavy phone users to see who salutes.

A colleague of mine, who is good for about $500 in long distance charges from home, brought a mailing from them to the office and said, "what the hell is this?" I told him (thanks to Boardwatch) and he gave me the brochure, which I acted upon.

The deal: Bell Atlantic is conducting the test through the end of June, having extended it once already. A participant has to be within 14,000 feet of the CO and be, I imagine of good character. The customer chooses from among three ISPs — a small one (CAIS), a large one (ClarkNet) and BellAtlantic itself. I chose CAIS.

I pay $30.00 per month to BellAtlantic, $28.50 per month to CAIS and got a 3Com Etherlink III card and a Westell 32RT07-02ER ADSL Remote Terminal Unit (ATU-R) for nothing. There was no charge for the extremely competent installation and, at the conclusion of my service, I get to keep the Ethernet card but must return the terminal unit.

I have stuck by my original ISP, patriot.net, to maintain my email address and homepage. So instead of merely paying $19.95 per month, I am paying almost $70. But, I now am able to use my phone at the same time I am online, so no longer have need for a second residential line.

The installation would have been effortless, I think, had I not also been simultaneously transitioning for Windows 3.1 to Windows 95. That produced a couple of minor complications.

Is the added expense worth it? When the Web is not bumper-to-bumper, you bet it is! I needed Netscape 3.0. Netscape sent me to an FTP site at the University of North Carolina. The 5.4 MB Netscape file downloaded in 27 secs.!

By the way, according to *Editor & Publisher* magazine, *The Arizona Star* in Phoenix — which already functions as an ISP — has hooked up with a fiber outfit there and is offering ADSL for $80 per month! I have no idea what it will eventually cost here, but Bell Atlantic gets more than $50 for residential ISDN.

Keep up the good work, but please lose some of the "rathers" in your stuff.

Brad Niemcek,
`bniemcek@patriot.net`

Brad:

Thanks for the excellent report. We think ADSL will be big this year, but I'm very hazy on who's going to deliver it, who's going to use it, and how it will be priced.

Less rathers, more work. Got it.

Jack Rickard

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GOOD JOB

Enjoy your view on the communications world very much, I am a recent subscriber and longtime reader I have developed the Burbank fiber network..a simple dark fiber network that can serve as a bed for all sorts of technologies people can dream up for the studios.



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fletcher@themall.net

Thanks Fletch. As to the business being complicated, well I guess it is. But I've found that if I will go shovel gravel for an afternoon, it seems like it's not half bad when I get back.

Jack Rickard

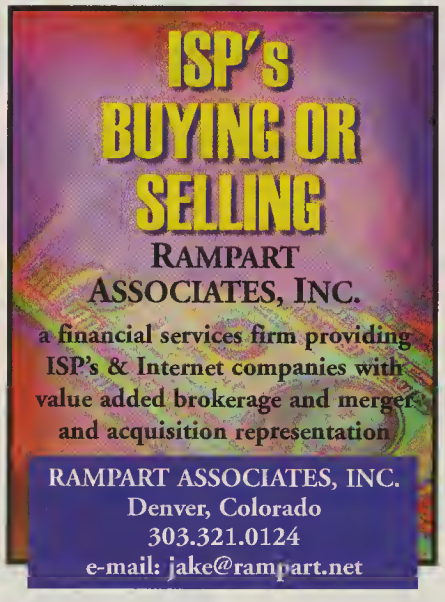
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RIP AND WIP

Mr. Rickard,

For quite awhile my interests have leaned towards online graphics, particularly RIP Graphics. This protocol has been dismissed as either dead or dying. An opinion that a few friends and myself are in the process of changing.

In the April 1996 edition of your magazine was an article about RIP (focusing on the program BitRIP), and another new protocol called WIP (Windows Interface Protocol). So far, all of my attempts of finding an email and/or url addresses for Durand Communications and any info about WIP have been unsuccessful.



Would you be able to supply me with those addresses or other sources of information about the protocol?

Thanks in advance for any assistance you can give me.

Doug Allewell
ImaginInk (tm) Online Graphics
email:imaginink@krdata.com

Doug:

Try sales@durand.com *and* **http://www.durand.com**. *You might also try* **http://www.mindwire.com**.

Jack Rickard

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WIN NT SERVER MAIL SERVERS

Jack, I recently read your article in the February issue, 'Connecting your small business to the Internet'. As always it was an extremely informative piece of writing. One section 'E-Mail Server' was of particular interest to me. I am working at a small company and am installing an NT server 4.0. I only recently (this week) signed on with this company and they already have a game plan for utilizing the NT server in the works.

In particular, they have a proposal on the table to purchase Microsoft Exchange and use it to access a mail server operated by Mich.com. In your article you suggest that a straight Internet mail system is a better buy. And, I agree. Now, can you point me in the direction of a good mail server for NT server 4.0? Any help you can give me will be greatly appreciated.

Jim Tourville
turbo@rust.net

Jim:

There are a number of mail servers on the market but Microsoft Exchange seems to be winning rather largely. This is probably appropriate for "in-house" mail systems and does offer some advantages beyond mail within an organization.

But increasingly, we are seeing organizations bypass the entire concept of an internal mail system and go to simply using Internet mail and the generic tools available for both internal and external mail systems. The old model of having an internal e-mail system with a "gateway" to the Internet really doesn't accomplish much anymore to my way of thinking.

There is a program for Windows NT titled POSTMASTER by SOFTWARE.COM. It essentially accomplishes the "sendmail" function on an NT platform and we're finding this program fascinating.

But it's not likely to displace our IPAD. We do a lot of Windows NT things, including all of our web servers (well, all but one BSDI machine). But we still like having a dedicated machine on the side that does mail and a few other things with out being interrupted by our whacking around on NT for various things.

Jack Rickard

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From: hpoole@scoot.netis.com
Subject: Permission to reprint
Cc: nnn0ast@stic.net

I am ramrodding a Home Page for the Navy MARS (Military Affiliate Radio System) by which we are attempting to keep net members informed of anything that may affect their official operations. Among other things, we are including warnings about various scams which they may find interesting and/or useful.

In ***Boardwatch***, March 1997, pg 90, is a small article titled "New Trojan Horse on American Online," which I believe would fit into that category and ask your permission to reprint it intact, with a credit line to ***Boardwatch***.

Should you have a moment and wish to see what Navy MARS is all about, take a quick look at:

http://206.202.0.2/~navymars/index.html

Meantime, my best regards,

Henry B. Poole
hpoole@scoot.netis.com

Rt.7 — 89 Old Nashua Rd
Londonderry NH 03053-361189

Henry:

I used to use the Navy MARS station in Yokohama to communicate back to the states when I was stationed overseas. I owe you one. Permission granted.

Jack Rickard

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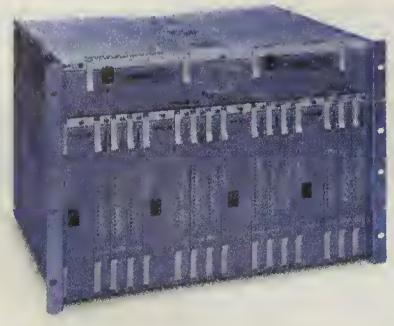
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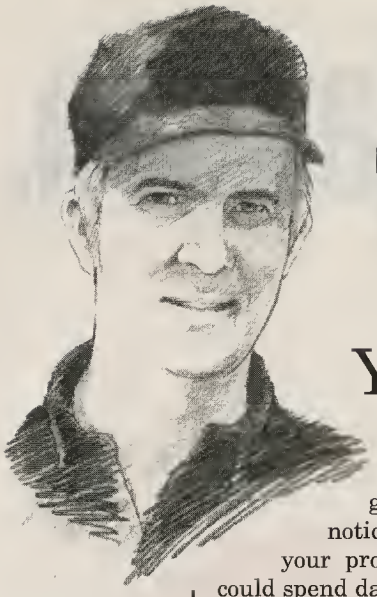
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TECHNOLOGY FRONT

by Jim Thompson
Western News Service

WISE-UP WITH THE WISE INSTALLATION SYSTEM

Jim Thompson is Managing Editor of Western News Service in Los Angeles, California. CompuServe: **72777,2677**, MCI Mail: **321-4127, mailto: jim.thompson @wnsnews.com**

You've finished your program and it's ready for distribution. Well, almost ready — you still need an installation program. It's a pain, but you know that without a simple install program, all your hard work may never be noticed. In fact, without the proper install, your program may never even be used. You could spend days writing the install interface, adding graphics and putting in the effects that give your program that "polished" look or you could get yourself a copy of the Wise Installation System. The Wise System lets you create a professional and sophisticated install program in a matter of hours, even if you have no programming experience at all.



The Wise Installation System 5.0, from Great Lakes Business Solutions, Inc. (`www.glbs.com`), is one of the easiest-to-use and most convenient programs that I have seen in a long time. No experience or programming skills are necessary to create a solid program that has as much glitz and glamour as you want or need. With version 5.0 you can purchase WebDepoly (available separately) which allows customers to download your application from the Web with a single click of an icon.



You can create your installation program via the easy-to-use Installation Expert or work directly with the many options via the Program Editor interface. The Program Editor is a GUI drag-and-drop script editor that streamlines the entire process. Whichever method you choose, the results are the same — a single, self-installing executable (16-bit, 32-bit, or both) which contains all your program files in a compressed format. If the program is large, it can be contained in a single file (convenient if you are distributing via CD-ROM or BBS) or broken up to span several diskettes.

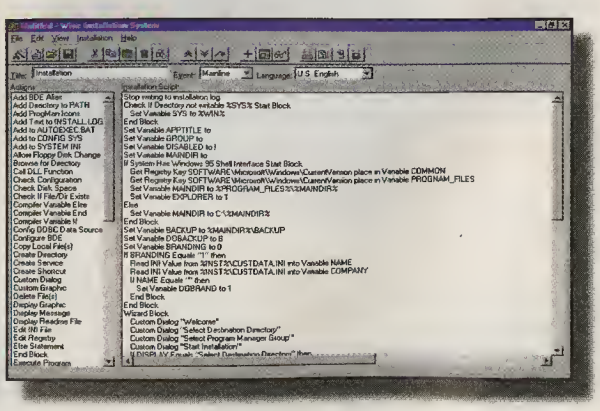
All installation programs will run under Windows 3.1x, Windows 95, and Windows NT. "Under Windows 95 and NT the installations support long filenames and the full Win32 registry. Under Windows 95 the installations support creating shortcuts. A single installation can be created that will install Win16 files under Windows 3.1x and Win32 files under Windows NT or 95."

The installation program provides the user with a full Windows 95 Wizard look and feel which can be fully customized to fill even the most demanding needs. This includes the automatic creation of multi-lingual install and uninstall wizards. The current version (5.0) comes with support for German, French, Italian, and Spanish dialogs. These dialogs provide translations for the basic functions. As with everything else, they can be modified or deleted to suit individual needs.

There are a host of other cool features as well, including full AVI Playback support, PDF file generation and SMS/MIF support allowing you to create a MIF file for use with an SMS type distribution system. There is also support for the display of both transparent and opaque bitmap graphics during installation, version checking and disk space checking, the creation of an installation log, and the executing of external programs during the installation process.

You will also find a customizable progress bar. Great Lakes Business Solutions includes sample source code so you can create your own unique progress bar. All script files are text based, giving you the option of using your favorite editor to make additions and/or changes.

The powerful scripting language allows for conditional compilations so you can create a single script for installing various versions of your software. Addi-



tionally, you can add a Service (background process) during install on an NT system, register files (OCRs and DLLs) already installed on the workstation or server, and search local and/or network drives for file compatibility.

The scripting language opens a world of possibilities for your installation. You can have multiple prompts for file locations, the option of making backup copies of replaced files, calls to DLL-based functions, the ability to read the values of environment variables, INI entries, registration database keys into script variables, and even the ability to create password protected installations. If this is still not enough, you can customize the installation with Visual Basic programs.

The Wise Installation even includes a fully customizable uninstall process which is automatically generated. The uninstall includes language and background properties, removes files and registry keys created by your program after the install, and will even execute external programs during the uninstall.

DISTRIBUTION ON THE WEB WITH WebDeploy

With WebDeploy you can offer program upgrades with minimal effort. In addition to the convenience, it allows you to capture registration information which can be compared to a customer database before downloading. A "lost connection" feature allows a user to restart a download at the point where the connection was lost. It also supports both HTTP and FTP protocols.



WebDeploy is not just a single file that contains the standard install program that was built with the Wise Installation. There is some intelligence at work here. The user downloads a small executable (approximately 90 KB) that uses the WINSOCK API to download only the files needed for the installation or upgrade. The downloaded executable runs the installation as a stand-alone application. The user's system is "scanned for existing files and only newer files are downloaded" and "existing files are scanned for changes and unchanged files are not downloaded." Download efficiency is increased by grouping smaller files together in a single file instead of compressing each file individually. (The result is a smaller overall file size.)

CONCLUSIONS

The Wise Installation System is a real joy to use. No matter what your installation needs may be, the Wise system can take care of them. Best of all, no programming experience is needed or necessary. One feature I particularly like is the "test" function which allows you to perform a trial run of your installation. This really takes all the guess work out of completing your final install program.

I was also impressed with the simple, straight-forward nature of the Installation Expert. All of the major areas of creating an install program are here making the work painless and easy. This can be followed up with a bit of tweaking with the program editor. The result is an installation program that has as many features as you want and, better yet, actually works.

SCRIPT ITEMS AVAILABLE IN THE WISE INSTALLATION SYSTEM:

Install File(s)	Register Font
Copy Local File(s)	Win32 System Directory
Prompt for Text	Check System Configuration
Display Message	Search for File
End Block	Get Name/Serial Number
Add ProgMan Icons	Read/Write File Data
Edit INI File	Set Variable
Display Graphic	Get Environment Variable
Execute Program	Radio Button Dialog
Call DLL Function	Check If File/Dir Exists
Edit Registry	Set File Attributes
Delete File(s)	Set Files/Buffers
If/While Statement	Play Wave File
Else Statement	Find File in Path
Remark	Check Disk Space
Custom Dialog	Install ODBC Driver
Get System Information	Configure ODBC Data Source
Get Temporary Filename	Configure BDE
Create Directory	Add BDE Alias
Exit Installation	Create Shortcut/Shell Link
Add Directory to Path	Add Text to INSTALL.LOG
Add to AUTOEXEC.BAT	Allow Floppy Disk Change
Add to CONFIG.SYS	Include Script
Add to SYSTEM.INI	Insert Line into Text File
Browse for Directory	Modify Component Size
Select Components	Parse String
Display Readme File	Self-Register OCXs/DLLs
Get ProgMan Group	Rename File/Directory
Read INI Value	Open/Close INSTALL.LOG
Read Registry Key	Install DirectX

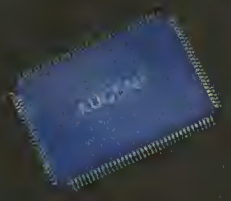
CONTACTS

WISE Installation System Version 5.0
Great Lakes Business Solutions
2200 N. Canton Center Road
Suite 220
Canton, MI 48187
Tel: (313) 981-4970
(800) 554-8565
BBS: (313) 363-6418
Web: `www.glbs.com`

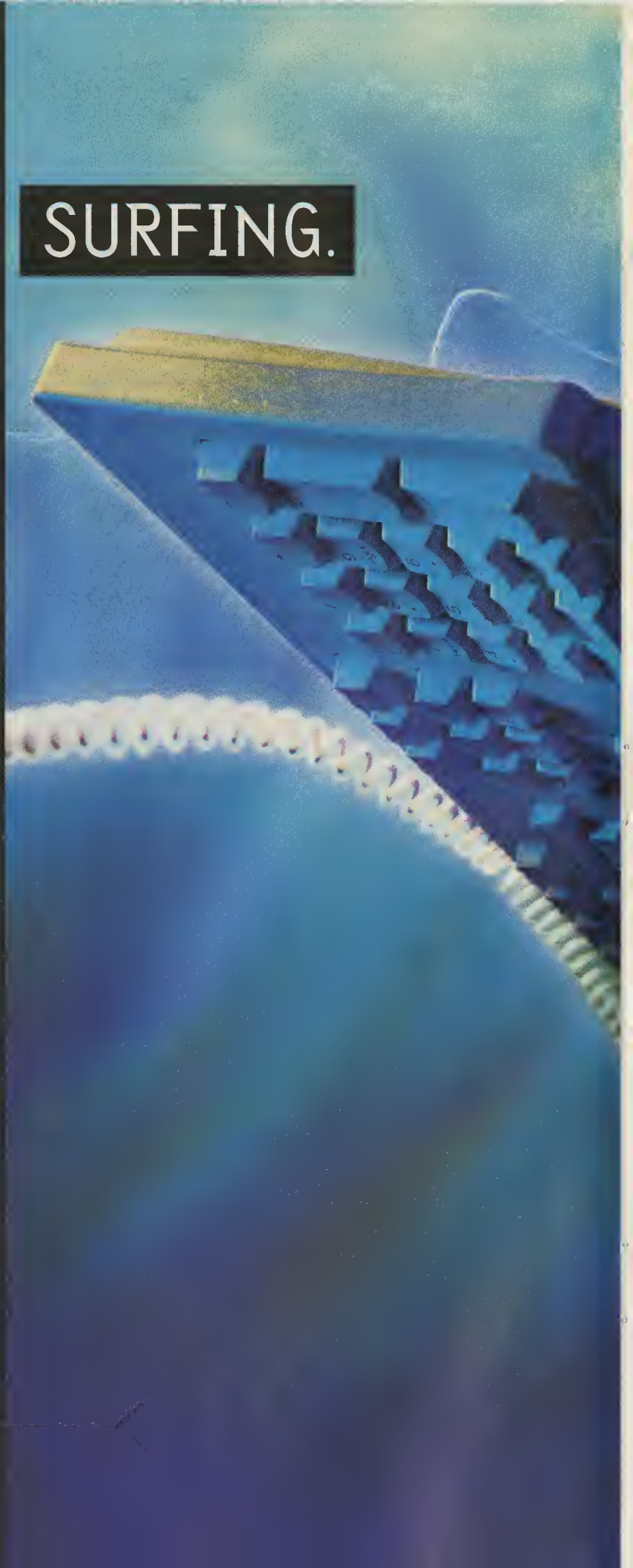
COST: **$199** for Wise Installation System 5.0
$368 for Wise Installation System 5.0 and WebDeploy

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SURFING.



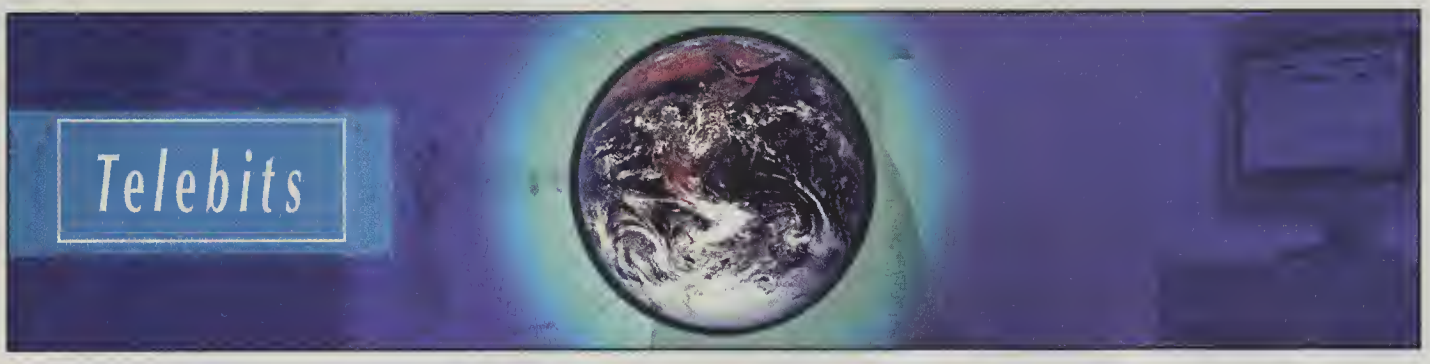
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K56flex. The new modem technology from the company that invented the transistor.

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Now you can surf the web without the wait. Introducing K56flex. The hot new 56K modem technology that lets you cruise the internet up to twice as fast as most modems. Pioneered by Bell Labs and supported by over 400 leading high-tech companies (including Compaq, Hayes, Hewlett-Packard, Multi-Tech Systems, Toshiba, and Xircom) to ensure widespread compatibility.
Modems based on Lucent's K56flex chips are truly software upgradeable so it will be easy to keep up with emerging standards. Plus, our chips are backward compatible, ensuring interoperability at the highest possible speeds with existing modems. To find out about the latest wave of PC companies, modem manufacturers and ISPs who are adopting K56flex technology, check our web site or call 1-800-372-2447 (ext. 948).
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NADER-LEAD GROUP TO BATTLE RBOCs

A nonprofit group, lead by well-known consumer advocate Ralph Nader, has requested that the U.S. Department of Justice investigate Bell Atlantic Corporation. The Consumer Project on Technology (CPT) asserts that Bell Atlantic and other local phone companies are "collaborating in anti-competitive practices against Internet service providers."

The group is calling for the Justice Department's Task Force on Telecommunications to investigate regional Bell operating companies (RBOCs), such as Bell Atlantic, Nynex, US West, and Bell South. The Consumer Project on Technology claims that the RBOCs have entered the ISP market offering "rates that are subsidized by government-protected services while at the same time severely increasing the charges for the same services provided for ISPs and those with direct digital services." CPT Director Jamie Love says that the group has also asked the Justice Department to look into predatory pricing by RBOCs who have launched Internet services. PacBell, for example, has offered five free months of Internet service with the connection of a second telephone line, according to Love.

In December, Bell Atlantic launched Bell Internet Solutions, Inc., and began offering unlimited dial-up Internet access for $17.95 per month. At the same time, the Pennsylvania Public Utilities Commission (PUC) granted Bell Atlantic an IntraLATA rate increase, allowing the company to increase access fees. Local independent ISPs filed suit which lead to a reprieve of the ruling until October 1997.

Pennsylvania is one of six states with an Internet tax. The Consumer Project on Technology claims that small ISPs in the state are only marginally profitable and that access fees and telco participation in the ISP market will drive most providers out of business. The group believes that if the RBOCs get their way, then consumers will be able to chose from only a small number of Internet service providers.

The Consumer Project on Technology maintains a web site at `www.essential.org/cpt/cpt.html`.

WEB SERVER PROGRAM PROTECTS AGAINST UNAUTHORIZED COPYING OF IMAGES

Image Guardian, by Maximized Software, is a Java-based web server utility for Microsoft and Netscape servers that protects copyrighted images from unauthorized downloading and redistribution.

Image Guardian gives web masters more freedom to display copyrighted graphics on their web sites. It costs **$39** per server which serves up to 20 domains and **$29** for each additional server or 20-domain license. More information on Image Guardian, including a 30-day free trial version, is available at `www.maximized.com`.

Image Guardian had previously only been available as part of Maximized's SiteShield suite which also includes WebReferee and WebJuggler, but was released in March as a stand-alone program. WebReferee helps stop improper references to web sites and WebJuggler allows web masters to serve different content based on environmental variables such as a user's web browser, operating system and platform. The full SiteShield suite cost **$99** per server which serves up to 20 domains and **$89** for each additional server or 20-domain license.

CISCO ACQUIRES TELESEND, HOPES TO ENTER xDSL MARKET

Cisco announced that it purchased Telesend, a privately-held Cupertino-based company, through a stock swap. Terms were not disclosed. It was the 14th such acquisition in the past three and a half years for Cisco, which has been actively buying Internet related hardware companies.

The Telesend acquisition opens the door for Cisco to enter the Digital Subscriber Line (DSL) business, in which Telesend had been specializing. All Telesend employees, including CEO Sayuri Sharper, joined Cisco's Wide Area Network (WAN) department.

Cisco also released the 90i channel unit for D4 DSL Frame Muxes, its first product based on Telesend technology. The 90i is an add-on for existing Cisco products and is geared toward small businesses, home Internet connections, and telecommuting. The 90i costs **$995**. It turns Time Division Multiplexing (TDM) D4 channel banks into frame multiplexers. TDM D4 channel banks are common in North American central offices, which allows the 90i to use already installed telecommunications equipment.

MCI LANDS CONTRACT WITH U.S. POSTAL SERVICE

MCI has landed its biggest-ever deal – a contract to manage the United States Postal Service's telecommunications network. The contract guarantees $100 million for MCI and could possibly yield $3 billion to the telecommunications firm. Partners in the deal include Cisco Systems and Digital Equipment Corporation.

The Post Office's new intranet will allow it to streamline operations and distribute information and software throughout its branches and distribution centers. It could potentially reach 340,000 Post Office facilities.

:-)

:-) ISP buys a network access server.

:-| ISP finds NAS not all

:-O ISP's customers don't always get fast,

:-(ISP can't promise users stability

(:-< ISP pulls all the hair out of his head.

:-D ISP hears about Shiva's award-winning

;-) ISP gets Shiva, grows hair back and

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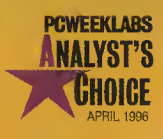


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KINTRONICS CD-TOWER AND WEB SERVER

Kintronics Computer Products has released a CD tower changer that is also a file and web server. It holds as many as 56 Nakamichi 8X CD changer drives, which have 4 CDs per drive, for a total of 224 CDs.



The AXIS StorPoint Server

The CD tower uses the AXIS StorPoint CD server software which allows it to be connected to a LAN just like any other node. System administrators can assign a single drive letter to the entire tower of CDs. The StorPoint can also be connected to the Internet allowing the CDs to be accessed through a web browser.

The Kintronics CD tower works on Ethernet and Token Ring networks. It supports IPX, SMB, NetBIOS, NetBEUI, TCP/IP, UDP, RARP, BOOTP, SNMP, HTTP, and FTP protocols.

The stripped-down model with 28 CD capacity costs **$3,300**. The higher-end model with 112 CD capacity costs **$12,500**. Kintronics sells the CD tower direct at **1-800-431-1658**.

LOTUS DOMINO SERVER PROTECTED FROM INTERNET VIRUSES

McAfee has released GroupScan 3.0 and GroupShield 3.0, an anti-virus program designed to protect Lotus Notes clients and servers respectively. GroupScan and GroupShield are the first native anti-virus packages for Lotus Notes.

Domino, the Lotus Notes-based web server, allows world wide users to securely access and replicate Notes applications through the Internet. Such applications can include file attachments and executable programs, making them ripe targets for viruses. Domino's use of push technology can force viruses onto users' desktops even if the users do not launch an infected application.

GroupScan and GroupShield offer real-time mail scanning and cleaning, protection against Notes security attacks, and native real-time scanning and cleaning for Notes-based macro viruses on applications and databases.

GroupShield is available for Lotus Notes servers 3.x and greater for NT, Netware, and OS/2. GroupScan costs **$7 per node** and GroupShield is **$22 per node** for 2,000 nodes. Both can be downloaded for evaluation or purchase at McAfee's web site at `www.mcafeemall.com` or by calling McAfee at 408-988-3832.

SATELLITE BITS

Comsat has begun implementation of ATM via satellite. The service allows delivery of Internet, video and telephone services at speeds ranging from increments of 56 Kbps (fractional T-1 up to 1.544 Mbps) to 45 Mbps. Existing Comsat customers will be allowed to broadcast ATM over their links at no additional cost.

Satellite links allow these services to be delivered to remote areas or countries in which there is little terrestrial infrastructure for telephone networks.

PanAmSat, of Greenwich, CT, recently added New Zealand to its list of countries to which it is providing satellite Internet service. The Internet Group, (`www.ihug.co.nz`) based in Auckland, New Zealand has established a 1.544 Mbps T-1 connection to the U.S. Internet backbone via PanAmSat's PAS-2 Pacific Ocean Region satellite.

PanAmSat has connected ISPs in over 20 countries, including Ecuador, Zambia, and Uganda, to the U.S. backbone through its connections in Atlanta and Northern California.

LIVINGSTON OFFERS ISP RESELLER PROGRAM

Livingston is accepting applications from North American ISPs for its new reseller program. The program is for ISPs in the United States and Canada who focus on connections for LAN-based corporate clients. Qualified ISPs will be entitled to an ISP Reseller Resource kit, inclusion in Livingston's ISP referral directory, and a free Office Router for evaluation purposes. They will also receive discounts on premium support services and be included in joint marketing programs.

The Office Router is available for a 30-day evaluation period. After that, an ISP reseller can buy it or keep it in exchange for a Livingston logo on its home page. ISP resellers are entitled to advertising funds from Livingston. Livingston will also train two members from each ISP reseller at its PortMaster technical training course in Pleasanton, California.

To apply for the reseller program, download a PDF-version of the application form at `www.livingston.com/ISP/isp_reseller.shtml`, which can be mailed or faxed back to Livingston. This site also has the full details of the program. Further questions can be addressed to Eric Launder, Livingston's Sales Development Manager, at **800-458-9966**. ◆

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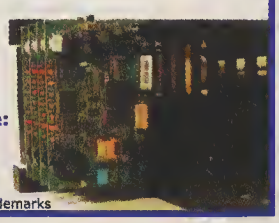


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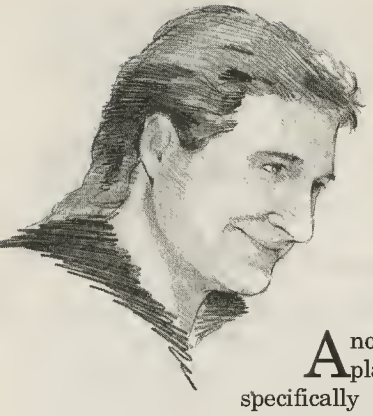
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BABB'S BOOKMARKS by Chris Babb

ADVISE THIS CONTENT

Chris Babb is a Senior Systems Engineer for Control Masters, Inc., a Systems Integrator located in Downers Grove, IL, where he designs industrial automation software by day. He's a member of the Aquila BBS/Internet Team by night. Chris has worked with Aquila since 1990 and currently handles technical support, web design and construction, Internet training and various other online and offline duties. In his meager spare time, Chris enjoys music, playing bass guitar, the outdoors and his kitties. You can reach Chris via **mailto:chris.babb@aquila.com**

Another interesting set of events has taken place that has thrust the Internet and more specifically the Web, into the spotlight. Of course, everyone has heard about the Heavens Gate Cult and I'm sure at least one person has pondered the thought that it wouldn't have happened if it weren't for the Internet. It wouldn't surprise me to hear that one of our illustrious congresspersons has decided that the Internet, and its influence with people of all ages, was one of the reasons that this tragedy occurred *and we need to have laws passed to prevent this from happening in the future*. Right. I hope that whoever considers a thought as ridiculous as this one will take into consideration that at one time, the religion they are currently practicing was thought of as a cult. Fortunately, most cults don't end up with really bad haircuts and ugly Nikes. To me, the whole thing was nothing more than trying to keep up with the Joneses (oohhh... bad pun). Pass me my mauve shroud and my Air-Jordans and let's get on with life.

We also have another round in the glorious battle of the browsers. I've used both the pre-release versions of Netscape and Internet Explorer, and I'll throw my recommendation toward MSIE. Why? Because it offers some really neat features with the integrated shell that Netscape can't touch at this point (at least for the way I use the Internet). If nothing else, the battle of the browsers seems to get everyone's juices flowing, doesn't it? Here we go with another round of "mine's bigger than yours." Well, at least they got that part correct.

This month, I want to talk about some sites that deal with rating content. I'm sure there are some who think that rating is a load of bunk and isn't worth the time to say it, but I must disagree. I would certainly rather see the industry rate itself rather than have Big Brother decide how to rate anything. It will take some of our time, and it won't work unless everyone does it. But, what is the alternative? I'm open to hearing just about anything at this time that doesn't include government regulation.

If you're interested in what the industry itself is up to with rating content, be sure to see what's going on with PICS (Platform For Internet Content Selection) at `www.w3.org/pub/WWW/PICS` where you can get all the gory and intimate details on where this could be heading.

RECREATIONAL SOFTWARE ADVISORY COUNCIL

`www.rsac.org`

With all the crap over site content and the ability for children to get at things they shouldn't, I was happy to see at least someone is promoting content ratings rather



than censorship. This is how the industry should be regulated. The RSACi mission statement says, "We are an independent, non-profit organization that empowers the public, especially parents, to make informed decisions about electronic media by means of an open, objective content advisory system." Sounds like a good start.

RSACi rates web sites based on content through a rules-based questionnaire, which it designed along with the assistance of parents, educators and experts. The questionnaire is completed by a web master and looks at four main categories: nudity, sex, violence, and language. Answers to these questions determine the next series of questions to be asked, which determine the rating. Furthermore, RSACi offers the ability for the web master to apply ratings to the entire site, specific sections or individual pages. Upon completion of the questionnaire, the web master receives the appropriate RSACi Rating Tag.

RSACi ratings work in conjunction with Microsoft Internet Explorer and allow parents and educators to restrict access to web sites. Buried within the Options settings of MSIE is the Content Advisor. A click on the Enable Ratings button shows the rating services you have installed and allows you to enable/disable the settings for each and their categories. RSACi comes preinstalled. To enable the system, you simply set the rating sliders to the level you wish. Pretty easy if you ask me.

Currently, RSACi has approximately 22,200 different sites rated in their database. While this is just a smidgen of the total number of sites out there and certainly doesn't cover everything, it is a good start to what I consider to be one of the more palatable ways to rate content. As more sites participate in rating systems such as RSACi and the others coming up, people will have less to complain about in terms of children accessing information that they shouldn't. What do you think? Check it out if you dare.

EVALUWEB

`www.sserv.com/evaluweb`

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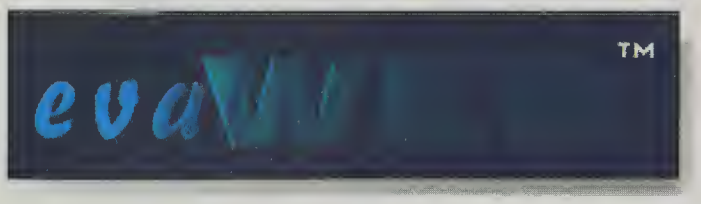
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nizes the need to rate web content to ensure that the proper content is targeted to the proper age of the user.

Again, as I said before, self-regulation is better than government regulation and this site helps meet that goal by using artificial intelligence to scan a submitted web page for content. It provides one of three ratings based on the content of the page. The ratings are GV for General Viewing, PA-13 for Parental Advisory, and XC for Explicit Content. While I feel that only three ratings are too few, it's still another good starting point.

EvaluWeb claims to intelligently rate for content on approximately 85 percent of existing web pages through sophisticated linguistic heuristics. Getting a rating is free and is done by submitting the URL for the pages you want scanned. Once submitted, a rating is generated within a few moments and you can then drop the proper rating code on your page. Another feature that this offers is the ability for an interested party to submit any page (this is not for web masters only) to see what it would be rated before unleashing their children on the site.

EvaluWeb also works in conjunction with the MSIE Content Advisor. In this case, a file is provided that you download and point to with the content advisor to enable the evaluWeb ratings.

Of course, there are a few types of things that a service such as this cannot yet deal with. Specifically, CGI content, non-English pages and frame-based content are a problem, but fixes are promised. This is another site that I suggest be given a good hard looksee.

SAFESURF

`www.safesurf.com`



SafeSurf is billed as the "Original Internet Rating System." It has a great site that is filled with information on protecting children and the rights of parents. It is further stated that SafeSurf "exists specifically to defend the innocence of each child." This is something that even I can agree to support in light of our alternatives. I still totally believe that if there is any censorship or restrictions placed on the Internet, it should be by parents and NOT by the government (have I stated this enough?).

A rating for your page is as easy to get as with the other sites mentioned above. Simply click on the "Rate Your Site" link and you are presented with a form to fill out that asks for the site URL, your name and e-mail address, some specific information about your site, and its theme and content. Once you've completed this form, submit it and the proper ratings html code will be sent to you via e-mail. Once you have the code, just drop it on the pages of your site and you're done.

The rating system through this site is more detailed and complex than on the two previous sites listed above. SafeSurf looks for 12 different themes that range from profanity to nudity and violence to gambling. Within each theme are nine caution levels that include subtle, explicit innuendo, graphic/artistic and explicit/crude among others. I'm not so sure that there needs to be nine caution levels. Maybe three to five is more like it as it starts to get slightly unmanageable. More than likely, the levels will be set to maximum filtering anyway.

Again, SafeSurf works with the MSIE Content Advisor and provides a file to download and point to within the Content Advisor setup. While this may begin to seem a little unwieldy with several different services to deal with and multiple levels of filtering to set, you have to applaud Microsoft for offering it in the first place.

There is a lot more to this site than just getting your site rated, but these go beyond the scope of this subject. I suggest that you make it a point to check it out for yourself.

MICROSYSTEMS PICS SERVICE

`www.microsys.com`



Microsystems, the makers of Cyber Patrol, also offers web site ratings and interfaces with MSIE. This site contains information on all Microsystems software (Cyber Patrol, Cyber Sentry and a handful of other programs) and for this review, a section on the CyberNOT Block List.

The CyberNOT Block List rates contents based on two categories: sex and other. Other includes items such as violence, gross depiction, drugs and satanic/cult with a few more sprinkled in. The sites listed in the CyberNOT are researched Internet sites containing material that parents may find objectionable. Fortunately, the listing is discriminating enough that only those pages with objectionable material are blocked while other pages at the same site without objectionable material are not.

The rating categories and caution levels within them are very similar to the SafeSurf levels. The listing is updated weekly and offers anyone the capability of submitting a site for evaluation. You can also search to see if a specific site is on the list as well as provide information on a site to be removed from the list (a most necessary item).

As with all the other ratings services listed above, you can download the content advisor file for interfacing with MSIE,

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although you will need to copy the text of the file from the screen and drop it into Notepad to save it to your hard drive. From there, simply point to the file from within the content advisor and block away!

All of the above sites seem to have a slightly different approach and I'm quite sure that not all lists will be the same. That's where the beauty of MSIE comes in with its ability to add different services into the content advisor. By adding these (and I'm sure there will be more in the future) with others, you can provide a safer environment for your children. While I detest censorship, I'd sure rather see it start where it belongs and see it limited to those who need it rather than force everyone, regardless of age, to abide by blanket restrictions on the entire Web.

NUTSITE OF THE MONTH

As if we didn't have enough to laugh about over the last month or so.

JOKE-A-DAY
`www.jokeaday.com`



Personally, I love to be kept in stitches... the laughing kind that is. Fortunately, with the Internet and specifically the Web, there are plenty of things around that keep me that way. Whether it's something outrageous (Sen. Exon, Heaven's Gate) or just something nutty (I don't really have to explain this one, do I?) I can always find something that will work for me. One of the things I found several months ago was the Joke-A-Day mailing list (`subscribe@jokeaday.com` include the string "subscribe yourusername@yourdomain.com" in the body of the message). Every day I get something new to guffaw over and I have acquired a wide variety of jokes to pull from my pocket whenever I need to lighten the atmosphere a bit.

I couldn't make mention of the mailing list though without bringing up the Joke-A-Day web site. It's an excellent extension of the mailing list and offers enough funny stuff to cramp-up the back of your head from laughing so hard. The site itself contains the current kneeslapper of the day prominently displayed on the first page. You also have access to the previous week's jokes, a huge list of links to other humor pages and the ability to sign up for the deluxe Joke-A-Day service which provides you with up to four jokes every day. Normal service of one joke per day is free. The deluxe service is $10 or $12 (depending on how you pay, credit card or 1-900 number) for 26 weeks of service.

My opinion of the jokes that I receive every day is pretty high. They are sometimes dirty, sometimes racy and, for the most part, always at least get me to smile. Definitely worth the price of reading my mail!

For the time being, my web site is down and awaiting a total make over. Look for it soon! You can always see my past columns at `www.boardwatch.com`.

I'm always interested in reading what you have to say and am always willing to take a look at a site... any site you think is interesting, useful or just downright strange. Let me know about them at `cbabb@aquila.com`. ◆

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LINUX REDUX by Alan Cox

SERVING THE WEB WITH LINUX

No matter how much you hate the Web you cannot exactly ignore it any more. However, the Web can be used for more than just allowing customers to fill the Internet with yet more weird and wonderful junk. You can easily turn the Web to your advantage for network management and support documentation — thus keeping users happy and support calls down.

Alan Cox is the Technical Director of CymruNet, a leading Internet service provider in Wales, United Kingdom. Cox is also a member of the Linux International Technical Board and the CERT Vendor contact for Linux. He maintains the ***http://www.uk.linux.org*** *web page and leads the Linux Networking Project, the project to port UNIX to shared memory multiprocessor architectures, and a project to port Linux to 8086 embedded controller systems. Send e-mail to* `alan@cymru.net`

CAN LINUX ACTUALLY RUN A LARGE WEB SITE ?

I almost always find this question is asked by someone with a very large and very expensive piece of equipment they just bought. The answer is normally yes. The web server, at a crude level, is a program that copies files from disk to the network. A reasonable 486 PC will run most web sites quite happily and a decent Pentium box will handle very large sites too. Doubters can take a look at `www.dejanews.com` which is built from SMP Pentium boxes. I run `www.uk.linux.org`, `penguin.uk.linux.org` and `www.cymru.net` on an 8 MB 486DX2-66 with no cache. It's not exactly yahoo.com but it is handing out a page every few seconds all day, every day without a glitch, and also being a terminal server.

The many people struggling along at schools and small charitable organizations (or for that matter at home) with cast-off 386SX machines and 2 or 4 MB of memory will also be glad to know that they can run some web software on that kind of machine. While the mainstream web servers don't exactly zip along on these kind of machines, there is a wonderful little web server called Boa (`www.boa.org`). Boa is quite capable of serving a page every couple of seconds from machines that would struggle to run Windows. Better than that, Boa is free software and a fine testimony to the "do one thing and do it well" philosophy of programming.

APACHE



Nobody can even contemplate discussing UNIX web servers without mentioning Apache. Originally a set of patches to the NCSA web server ("a patchy web server"), the Apache web server has become the *de facto* standard web server for the Internet. Surveys consistently report it at over half the web sites in the world. Almost every Linux distribution ships with Apache, frequently in a ready to go form (which is always nice).

Apache supports all the major features which people are likely to need and a couple of interestingly useful toys of its own. One standard item is CGI (Common Gateway Interface) which allows you to plug thousands of standard tools into your web pages. It is a good idea to check the origin and code for many of these tools. They seem to come with thousands of standard bugs too.

Apache is documented at `www.apache.org` and also has its own online magazine called *Apache Week* (`www.apacheweek.com`). As the code is freely distributable and extensible, various commercial variants have sprung up offering easier configuration, secure socket layer services, and technical support. Given the low prices for many of these commercial spin-offs they are probably worth a look if you don't feel confident about setting up the free variant.

COMMERCIAL SERVERS



As well as the free web servers, of which there are plenty, several commercial products have appeared. Some are commercialized versions of Apache, but others are separate developments and offer different features. Caldera (`www.caldera.com`) will soon sell the Netscape server for Linux. These are the same people who produced the very successful Netscape web browser. Another example rapidly getting a name for itself is Zeus (`www.zeus.co.uk`) which its authors claim is the world's fastest web server. For a fairly complete list of commercial web servers for Linux take a look in the Linux commercial software list. (`www.uk.linux.org/LxCommercial.html`).



VIRTUAL SERVERS

It would be most inconvenient to require one machine per web server. Some large ISPs have upwards of one thousand web sites on one machine. The Linux kernel and most web servers work together to provide multiple virtual sites. Each network interface under Linux can have multiple IP addresses attached to it and each of these can have a different web server. This means a single machine can be both your web server and your customer's (or another group's) web server under another name.

These extra addresses are added by configuring devices "eth0:0", "eth0:1" instead of "eth0" for whichever device you want to attach. Having done that, you can update the configuration of the web server to include the new site and restart it. By setting up each virtual server to have its documents in a directory belonging to its owner, you can allow people to maintain their whole web site without your intervention.

Virtual servers use (many would say waste) a large number of IP addresses simply because the http protocol used to transfer web pages didn't provide the host part of the URL to the query in the server. The latest http protocol specification has resolved this weakness. Newer web servers, such as Apache 1.2, can use this facility so that most web users get all the target they intended while using only one IP address. Those whose browsers are very old and do not support this facility can be conveniently dropped into a menu of sites available.

SECURE SOCKET LAYER

The secure socket layer, or "SSL," is one of the big things you will need if you wish to use a web site for electronic trading. SSL provides at least an illusion of security for transactions passing between the web site and end user. Why an illusion? Well it is because most people are using web browsers that only have 40 bit encryption so as to meet the U.S. export rules. This kind of SSL connection can be cracked in a day or two. While a day may sound like a lot of time, it's worth it to a criminal wanting credit card details.

If you invest in a web server that supports secure socket layer, ensure it can do at least 128 bit encryption. Various browsers support 128 bit. This is believed to be secure. Browsers supporting 128 bit encryption include the non-export Netscape, Lynx2.7 SSL (an RPM is at `ftp://shadow.cabi.net/pub/Linux`) and the patches for Mosaic. If your server can do 128 bit encryption, then it is up to the user to choose insecure 40 bit keys or make the effort to get a secure browser.

For those of us lucky enough to be outside the U.S., it isn't necessary to purchase an SSL web server as most other countries regard algorithms as discovered not invented. (This means they are a statement of mathematical fact and true before anyone realized it.) These people can get patches to Apache that use SSL-eay to build "ApacheSSL" which is the free Apache with SSL. In the U.S., you need to have patent licenses to do this. The patent license for the server is part of what is included in the price of the products.

To make SSL work, you have to possess X.500 certificates from a signing agency whose certificates are trusted by the web browsers. These certificates are used by the browser to check that the person we are passing data to is in fact who they should be, and as a statement that someone has at least checked his existence. There is a wide choice of signing agencies each with a different policy on what it will sign and what it charges. One of the most commonly used is Thawte (`www.thawte.com`) because it will sign certificates for ApacheSSL and commercial Apache SSL products. There are many others and you should check with the vendors of servers what options are available and their price. Some signing agencies charge very large amounts of money and you don't want any nasty surprises.





ATTACK OF THE 8.3 FILENAMES

As soon as you have customers or other bits of your organization uploading web pages, you can guarantee all hell will break loose. In the case of the World Wide Web, this is normally owing to 8.3 filenames and the assumption that "case does not matter." Even when a customer has been careful or used good tools to avoid this occurring the default title page (the one shown when a directory name is given—e.g. for `www.mycom.com`) is index.html. Under Windows this file is of course a little tricky to create.

There are two approaches to avoiding these problems (other than going home and refusing to come out of the wardrobe until next month). The first one is to make use of Apache's ability to change the index.html file to allow index.htm as well. The Apache configuration file "srm.conf"—normally found in /etc/httpd or /usr/local/etc/httpd/conf allows you to set the names used. This doesn't solve the problem of incorrect pages, and apart from encouraging people to use good tools it is hard to avoid the case dependency and filename length problems.

Apache 1.2beta7 includes a new module in the server which allows you to ignore much of the problem. It does semi-intelligent matching of requests and path names and will handle many of the common 8.3 and case dependency errors.

SEARCH ENGINES



For all that the World Wide Web is supposed to be wonderfully easy to navigate, you will find a search engine is very, very useful. There are several good free or semi-free search engines. I've been using the Htdig package from SDSU (`http://htdig.sdsu.edu`) for quite a while to generate indexes for both our own sites and customer sites. Htdig is free and does a reasonable job. It can index multiple sites and the forms to add to end-user web pages are easy to define.

In its default format Htdig doesn't look very impressive, but you can improve this significantly by altering the templates it uses to build the search results. In addition if you need to do something even more clever, you can get source code.

Another popular web search engine is Webglimpse. This is built on the glimpse text search tool from the University Of Arizona (`http://donkey.cs.arizona.edu`). Webglimpse works very well but isn't free for commercial use as Htdig is.

JAVA

Java normally runs on the client machine and so requires no support on the server. However if you want to build Java applets for web pages, then you will need the compiler and tools to compile Java programs into code for the Java virtual machine. The standard reference tool set for this is the "JDK" from Sun and the current version is 1.1. A Linux port of JDK 1.1 should have been released by the time this article is published.

If you are interested in Java and Linux you can find the project status, packages and documentation on the `www.blackdown.org/java-linux.html` web page.

MRTG—A NIFTY TOOL

However jaded about the Web you may be, there are some great uses of it. One of my favorite toys is the Multi-Router-Traffic-Grapher (MRTG). This is an application that uses SNMP to monitor the load status of all your routers and, if they are running cmu-snmpd, all your Linux hosts. Instead of feeding the data into a network management tool, it generates sets of web pages giving short and long term traffic statistics in an easy-to-read graphical form. If you ever need to explain to your accountant why you need more bandwidth, here at last is output that almost anyone can follow at a glance.

You can find MRTG at `www.ee.ethz.ch/~oetiker/webtools/mrtg` and it is well worth installing if you need to monitor router loads. Tobias Oetiker and Dave Rand have created a very, very useful program.

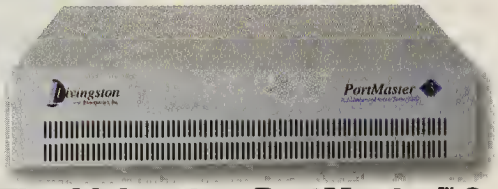
Linux Expo is fast approaching and will feature some of the big names in many areas of Linux. Kernel hackers, application developers, end users and game writers will all be there for what promises to be an exciting event. More news next month.

Widget of the month has to be the Hauppauge WinTV/PCI card, and the Linux driver by Ralph and Marcus Metzler. Ever wondered what it's like to be able to watch TV on your news server? Visit `www.thjp.uni-koeln.de/~rjkm/linux/bttv.html` and you can find out. The driver is still a very much beta test but it works nicely for me. ◆



WE HAVE ONLY ONE THING TO SAY ABOUT UPGRADING TO 56 KBPS.

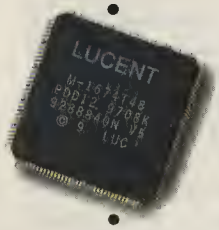




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CONSUMMATE WINSOCK APPS

by Forrest Stroud

WHEN FREE IS (ALMOST FREE)

If you're like me, there aren't many things that you buy more of than CDs and books. If you have a web site and you've ever found yourself dreaming about how great it would be to get these two essentials of life for free, then read on because I've found two sites that can truly make your dreams come true.

The Amazon.com online bookstore (`www.amazon.com`) is the largest repository of books in the world. It now offers more than 2.5 million books for sale over the Internet. In addition to excellent service and great prices, Amazon.com also makes it possible for you to earn money by joining the Amazon.com Associates program. Through the Associates program you can sell Amazon.com books from your site. In return you get a referral fee, or percentage of total sales. All you have to do is provide links to books that you would like to sell from your web site and Amazon.com handles the rest, including order processing, shipping, payment collection, and referral fee distribution. Your referral fee is paid by check (as opposed to store credit), so you're not obligated to use the money toward more books (unless you want to, of course).

The second site is CDNow (`www.cdnow.com`), the single largest retailer of CDs on the Net. CDNow offers a program similar to Amazon.com Associates called *CDNow Cosmic Credit* (`www.cdnow.com/cosmic`). You provide links in the same manner and, in return for sales made through your site, you are provided with credit toward CDNow products. You can use the credit to buy CDs, tapes, T-shirts, videos (over 35,000 choices), and more. Don't expect to break the bank with either of these two programs — for each sale made you only receive about 5 percent in return. On the other hand, there aren't many (legal) ways that you can obtain books and CDs at prices better than the those available through CDNow and Amazon.com. And if money's an issue and every penny counts, it's definitely time to check out Amazon.com Associates and CDNow Cosmic Credit.

ZipFolders. Archived programs are an Internet trademark. Designed to compress and aggregate a collection of files into one easily manageable file, archives make downloading, transferring, and serving applications over the Internet much easier and more efficient than would otherwise be possible. The most common method for archiving has traditionally been the Zip file, a format first offered by PKWare back in the mid-eighties. While today the popularity and technology of Zip files have largely been supplanted by self-extracting archives, Zip files remain prevalent on the Net and are still one of the most frequently encountered archive technologies. The only problem with archived files is that, as a result of their compressed state, working with the individual files that have been stored within the archive involves first decompressing the entire archive. The first generation of tools created for the purpose of compressing and decompressing archives were primarily DOS-based programs (PKZip being the most prominent) that served their purpose but paled in comparison to their next generation counterparts. Clients like Winzip and WinPack are examples of the second generation of archive management tools. These applications make use of the Windows interface to facilitate the process of compressing and decompressing file archives as well as the ability to perform file management tasks on the files contained within the archives (for example, viewing, executing, and renaming individual files).

These tools have been must-have applications for anyone who uses the Internet on a regular basis. WinZip in particular has attracted a cult-like following. Still, despite their attractive interfaces and wealth of features, all of the second-generation tools, suffer from at least two shortcomings. First, file archives still must be entirely decompressed before you can run any of the applications stored within. Second, these tools lack the full functionality of a true file management program like the Windows Explorer. For example, while you can use a client like WinZip to view, remove, or extract individual files, there is no way to execute programs, edit or rename a file, move a collection of files, search for a specific file, or even perform common tasks like drag and drop into and out of an archive. Thankfully, the third generation of archive management tools has arrived in the form of

ZipFolders

zipfolders .zif

Desc:	A third generation archive management tool and a definite must-have app
Pros:	Amazing technology that allows you to work with Zip files as if they were normal directories, tons of features
Cons:	Lacks WinZip's simple one-step install/try/uninstall feature, doesn't work with all archive formats
Location:	`ftp://ftp.mijenix.com/pub`
Filename:	Zif??-??.exe
Status:	Free 30 day evaluation. Shareware - $29.95
Company:	Mijenix Corporation
Website:	`http://www.mijenix.com/zipfolders.htm`

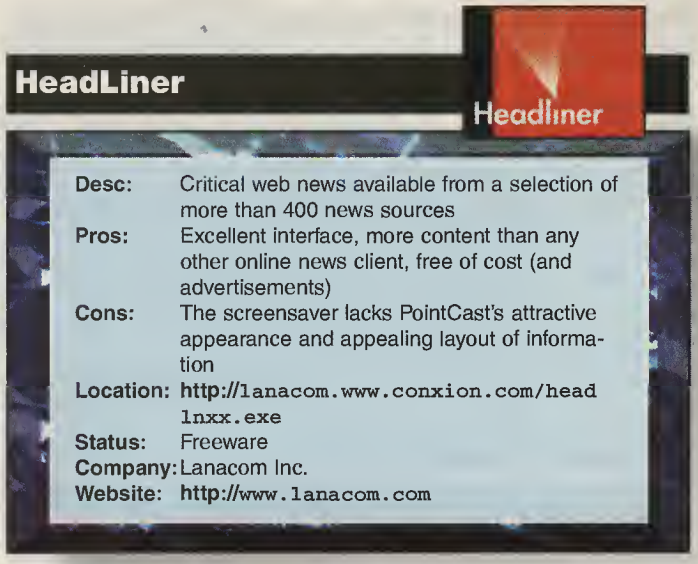
The applications reviewed here and many more are available on Stroud's Consummate Winsock Apps List, **http://www.stroud.com** and **ftp://cws.iworld.com**.

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ZipFolders. This is an amazing application whose technology allows for all of the above tasks as well as many, many more. In its most basic form, ZipFolders is a virtual device driver that is automatically loaded by the operating system when your computer boots up. The driver allows Windows to treat Zip archives as normal directories. These virtual folders, the contents of which are the actual contents of the archive, are called *Zif* folders (labeled with a .zif extension) and are made visible to all applications. Additionally, any file management actions performed on these folders are actually made to the archived Zip file and the files contained within that Zip file. For example, if you use the Windows 95 Explorer to move files into or out of a Zif folder, you are actually moving files into or out of the Zip file itself. Thanks to the ZipFolders technology, now you can use archives with the applications and file management programs that you are most comfortable with. And nearly every file maintenance task imaginable can be performed with Zif folders using a client like the Windows 95 Explorer or even third-party utilities. Of course, there is a slight drop in performance when working with Zif folders as opposed to regular folders or directories. This is because while you perform file management tasks on Zif folders, the files within the archive are automatically compressed or decompressed for you in the background. Depending on your needs, you can instruct ZipFolders to use greater or lesser levels of compression to receive a corresponding decrease or increase in overall performance.

This is an especially useful tool for Internet users as you can run any program or game directly from a Zif folder — there's no need to first decompress an installation file to a temporary location and then run the installer for the program. Other uses for ZipFolders include storing seldom used files in Zif folders to save hard drive space, quickly transferring files or directories between computers while still retaining the ability to immediately access individual files, archiving entire directories for backup or temporary storage purposes, and much, much more. And for the archival purists, ZipFolders also offers the more traditional methods for compressing and decompressing Zip archives via "Zip to" and "Unzip to" options. Support for file encryption, multi-volume Zip archives (multi-disk spanning), conversion capabilities for other archive formats (including ARJ, TAR, LZH/LHA, ZOO, Z, GZ, and TAZ), an option for adding comment additions to Zip files, and self-extracting archive creation capabilities are all available for compressing and decompressing archives with ZipFolders. With its advanced technology, an abundance of features and configuration options, and an inexpensive price tag (just under $30), ZipFolders is an impressive app by all measures and may take the prize for overall ease of use. Watch out WinZip — ZipFolders has arrived!

HeadLiner is one of the more recent online news applications to hit the Net and the first to give PointCast a serious run for its money. Like PointCast and BackWeb, HeadLiner is a channel-based "push" technology client that delivers news in a fashion similar to your basic cable TV — each channel offers specialized content that is broadcast to its subscribers. You pick the channels that interest you and HeadLiner does the rest. As with PointCast, Headliner's interface has been developed from the ground up to be efficient and intuitive for all users from Net novice to Net adept. In fact, in many areas HeadLiner even goes above and beyond PointCast in terms of usability. HeadLiner features the ability to display headlines in the conventional manners (news ticker, screen saver, and web page articles) as well as a unique and extremely nifty display called the *NewsTitle* viewer. This is a ticker that scrolls news for you in the title bar of your applications. The ticker



automatically switches between applications as you work and always appears in the active application for you. By pressing a small icon button, you can temporarily minimize the ticker to view the title bar and then switch back again. You can even combine the NewsTitle viewer and the standard ticker to view two news feeds at once. After trying out all the display views currently used by online news clients, I must say that the NewsTitle ticker is hands-down the best means for viewing online news currently available. It's also a critical feature that you won't find in competing apps like PointCast, BackWeb, and My Yahoo! News Ticker.

The fun and frills of HeadLiner go beyond the NewsTitle viewer. HeadLiner offers you up-to-the-minute customized news and information from more than 400 web-based news sources, with additional feeds being added nearly every day (look for a customized CWSApps feed soon). The current fare of news sources are grouped into twenty major categories and include everything from traditional newspapers *(LA Times, Boston Globe, Chicago Sun Times, New York Post, Wall Street Journal)* to computing titans (ZDNet, *PC World, Internet World,* Yahoo!) to stock quote servers (Quote.com, SECAPL, MSN Investor Quotes) to sports feeds (ESPNet SportsZone, Sports Illustrated, Fox Sports, MSNBC Sports) and much, much more. PointCast may have the edge on overall appearance, but it certainly lacks HeadLiner's extensive range of news content. HeadLiner also sports alert messages and sounds that notify you when critical changes in information occur. For example, you can set up a filter to alert you if a stock price rises above or falls below a specified price. Additional features include a setup wizard for customizing HeadLiner, news summaries (available by pointing your mouse on a specific article in the ticker without clicking on it), one-click access for viewing your articles within your favorite web browser, and a history feature that saves old articles and web pages based on your preferences. The best news of all is that everything (including the client itself) is available for free and without the constant clutter of advertisements. When you combine its ease of use, extensive content, and extremely appealing price tag, HeadLiner is an app rivaled only by PointCast and even that is a matter of considerable debate.

The **Pronto** family of clients is relatively new to the e-mail scene, but it has already developed a loyal following. The commercial releases, Pronto Mail for Windows 3.x and Pronto 97 for Windows 95/NT, offer a great selection of features but ultimately suffer from the same fate as many other commercial mail clients. The **$59** price tag for each client is quite steep,

Pronto Mail for Windows

Desc: An impressive set of mail clients with a price tag and features designed to fit your needs
Pros: Family of clients for different needs, multilingual spelling checker, customizable toolbar, powerful feature-set
Cons: Mailing list and filtering capabilities are not as powerful as Pegasus Mail, price tag of commercial release
Location: ftp://ftp.prontomail.com
Status: Freeware and commercial releases both available
Company: Commtouch Software
Website: http://www.commtouch.com

especially when compared to the top two freeware mail clients currently available on the Net (Pegasus Mail and Eudora Lite). This attribute alone has made it quite difficult for the commercial Pronto releases to effectively compete in this market. Because of this, two separate freeware Pronto clients were recently released to compete against the likes of Eudora Lite, E-Mail Connection, and Pegasus Mail. The first, Pronto Lite, is a Windows 3.x app that offers most of the full version's great features but does lack the built-in spelling checker (with support for multiple languages), an unlimited number of folders, address book sharing, and the powerful advanced rules engine/filtering system. One advantage to downloading this freeware client over downloading the 30-day evaluation release of the commercial Pronto Mail client is that if you decide to register the full commercial version, you will automatically receive a 33% discount (**$39** compared to **$59**). The second freeware release, Pronto Pro, is an ad-supported client that offers the same great features as the commercial version. If the commercial version's price tag is a bit daunting and you can live with constant advertisements, Pronto Pro is definitely the way to go. This client also comes in two versions, a single-user standard version and a family edition that features a unique dual interface (a cartoon-like one for kids and the standard Pronto layout for adults).

All of the Pronto members feature built-in multilingual spelling checkers (except for Pronto Lite), as well as support for MIME, MAPI, and UUencode. Pronto clients will also allow you to run other programs while sending or receiving mail, a feature found in most other mail clients today (with the notable exception of E-Mail Connection). While Pronto's filtering options are more extensive than many mail clients, they are still not as powerful as those of Pegasus Mail (for example, although automatic replies are allowed, you cannot specify a file on disk for this purpose). The customizable toolbar, unique to Pronto, allows users to easily add or delete their own icons. Additional Pronto features include extensive drag and drop capabilities, voice message send and receive capabilities, video message support, URL and e-mail address recognition, advanced message searching, ability to import/export folders, support for the relatively new IMAP4 protocol (only available in the Pronto 97 release), integrated ViruSafe technology (again, only in Pronto 97), and the recently added advanced filtering capabilities. Overall, if price weren't an important issue, the commercial version of Pronto would be much closer to the top mail clients in terms of overall value; however, for many of us, an app's price tag is critically important. For this reason, while the commercial Pronto Mail release may not compete as well with the likes of Pegasus Mail and E-Mail Connection, the ad-supported freeware Pronto Pro release definitely gives these two clients a run for their money and perhaps even edges E-Mail Connection on a strict feature-to-feature basis of comparison.

FileFerret

Desc: An essential search tool for finding files on the Net
Pros: Quick, easy to use, searches multiple archie servers to find Internet files
Cons: All archie servers and clients lack intelligent searching and other critical features
Location: ftp://166.82.162.4/pub/ferret
Filename: NetFerret???.exe
Status: Trialware - **$29.95**
Company: FerretSoft, Inc.
Website: http://www.webferret.com/netferret/fileferret.htm

FileFerret is the automatic file transfer release of the NetFerret suite of search clients (**http://cws.iworld.com/32suite.html#netferret**). This particular ferret will help you locate files anywhere on the Net. All you need to do is input one or more keywords and then restrict the search to a specific country (or search the entire world if you prefer). FileFerret handles the rest by contacting various repositories of Internet files known as archie servers. A resulting list that matches your keywords will then be brought up with complete server, address, size, type, and date information for each file. One critical advantage that FileFerret offers over competitive clients like WS Archie is the ability to download a particular file by simply double-clicking on it, which means you will no longer need to run a separate FTP program to handle this task. Like the other NetFerret clients, FileFerret exploits HTTP/FTP proxy support, allowing users behind firewalls to make use of its capabilities. FileFerret is currently available for evaluation as part of the NetFerret suite (with a June 15th expiration date), or the entire suite can be purchased on the Net for **$29.95**.

Limitations inherent in the archie system of file categorization and storage ultimately weaken FileFerret's overall usefulness. First, because both FileFerret and the archie system in general lack intelligent searching, the exact filename for a desired file must be entered, making it difficult for users, especially novices, to download the files they want. For example, entering the keyword "Netscape" will get you nowhere; only by entering the exact filename, usually a string similar to "n32e30p.exe," can you use FileFerret to find and download the correct file. A second limitation is that many archie servers lack comprehensive collections of Internet software; quite a few of the best clients featured on The CWSApps List can not be found using an archie server. Also, even when a server does carry an application, there is often a considerable time-lag between when a new version is released and when an archie server actually puts the latest version on its server. Finally, when using an archie server there is no way to tell whether the file you are downloading is the most recent version or an outdated one. Granted, when you do know the exact filename and the latest version of the application you are looking for, FileFerret and similar archie clients are extremely useful. However, when this is not the case, an archie client's overall value diminishes drastically. Overall, FileFerret may not be the most useful release of the NetFerret collection of clients, but it can still come in quite handy when the need arises. ◆

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MAN'S BEST FRIEND?

Don't be fooled. *"Man's Best Friend"* is MovinCool. MovinCool brings air-conditioning precisely when and where it's needed. By spot cooling just the people, process or equipment that need to be cooled, MovinCool is a cost-effective alternative to conventional air-conditioning systems. Plus, should you ever need to move, MovinCool moves right along with you.

SOME EXAMPLES?

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WHAT ABOUT PERFORMANCE?

Don't let MovinCool's rugged exterior fool you. The true beauty lies within. Built to perform, MovinCool is totally self-contained and will last for decades. With its quiet rotary compressor, thermostatic control and condensation reservoirs featuring automatic overflow protection, you just turn on your MovinCool and forget it.

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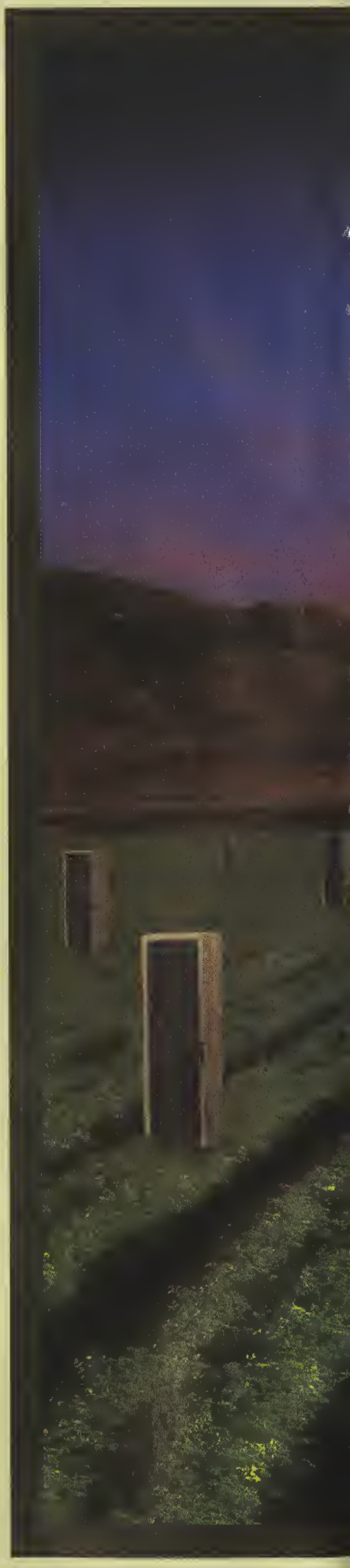
THEY BET *the* FARM

With a vision for the Internet and the trust of thousands on the line, DIGEX needed a company that provided a lot more than just hardware.

Very simply, the people at DIGEX™ bet the farm on Compaq running Windows NT®—a combination that is changing the way we do business on the Internet forever. Two years ago DIGEX was a small regional Internet Service Provider. Today they are a national Internet carrier and the world's largest web site management facility based on Microsoft NT.

Providing industrial-strength Internet hosting services, DIGEX is home to many of the most popular and innovative web sites today, including Bombay Company, Allstate Insurance, Ernst & Young and Net Grocer. By going beyond the RISC/UNIX alternative and partnering with Compaq, they made doing business on the Internet a much easier and more accessible undertaking for thousands of businesses.

Compaq was chosen to be the exclusive NT platform to power this business because the people at DIGEX needed a company that provided a lot more than servers. Even the most powerful, manageable and reliable servers. DIGEX needed the best proven solutions to implement, manage and grow with NT web hosting. With state-of-the-art systems management and continuous service and support, Compaq provides exactly that. And Compaq's alliance with Microsoft makes certain DIGEX is running the most robust and open platform for the Internet. This is how DIGEX's vision became a reality.



DIGEX™ BUSINESS INTERNET

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access

Compaq Internet solutions are helping businesses change the world. It's what we call Access and it's the way we're connecting people to people and people to information. To find out what Compaq can do for your business, contact your local Compaq Authorized Reseller or visit us on the web at www.compaq.com.

COMPAQ



TUCOWS

Scott Swedorski

VIDEOCONFERENCING SOFTWARE MOVES FORWARD

Scott Swedorski is president and founder of TUCOWS, The Ultimate Collection of Winsock Software. He lives in Flint, Michigan with his wife, Vicky and 2 daughters, Emily and Ashley. After joining the army at the tender age of 17, Scott received his degree in Computer Information Systems from Mott College, and received an Honorable Discharge after 8 years service. Scott welcomes input from Internet users and software developers at tucows@tucows.com.

Videoconferencing is one of the hottest new applications to hit the Net since the advent of Internet phone software. Videoconferencing applications combine video, audio, graphics, file-sharing and text-based applications to allow computer users to collaborate with one another through both video and voice interfaces. In addition to the software (and a high-speed Internet connection in most cases), users at each end of the connection will likely need a video capture device and sound card.

Until recently, videoconferencing over wide area networks like the Internet was only within reach of large companies due to the huge price tags attached to the hardware and software. Internet videoconferencing may still be in the relatively early stages of development, but adventurous users will be able to experience this new method of communication using relatively low-priced technologies. The audio and video technologies used to send the data over the Internet are quickly evolving to the point where even lower end personal computers can be used for videoconferencing.

There are quite a few video collaboration packages available on the Internet. Registration requirements can range from sending in a postcard, up to the cost of **$400**. The availability of the software at such reasonable prices is finally making video-conferencing an affordable option to home users and small business, where it was once only available to large companies and governments.

These applications are no longer just simple programs that send pictures across the Internet; they include a host of add-on features to take full use of the multimedia capabilities of home computers. Whiteboards, graphic drawing-pad programs, can permit users to literally "sketch out" ideas and share them with one another in real time. Televideo programs frequently offer text-based chat programs, which can transfer text data between 2 or more parties, some offer the ability to more readily share files with multiple users.

As time progresses, look for more software and hardware applications of this type. The Internet is quickly growing into its role as a truly global communications medium, and Internet videoconferencing goes a long way to fulfill this dream.

WINDOWS 95 SOFTWARE

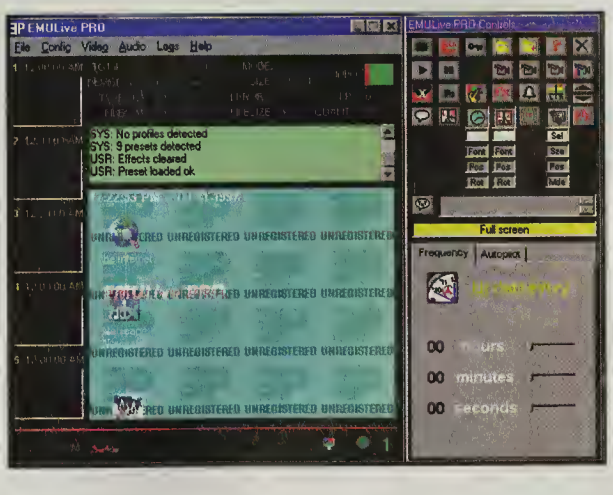
EMULive PRO may not be a true videoconferencing application, but it does offer web masters the capability to rock their web sites with fluid post-processed video. Loaded with a ton of features, EMULive pumps

EMULIVE PRO VIDEO PRODUCER

Version Number: 3.6
Byte Size: 5,009,233
License: Demo
Author: JCS\line
HomePage: www.jcs-canada.com

from any PC on any dial-up or fixed Internet connection. Video capture settings can be set from between 2-20 frames per second, making the software ideal for creating a web-cam site.

EMULive PRO uses almost any Video-For-Windows capture device or its own patent-pending Screen-scrape driver for a source image. There are approximately 20 different image-capture devices listed that work with EMULive, including the popular Connectix Quickcams. Web servers receiving the images can be of any platform.



EMULive PRO takes images from a variety of available sources on a frame by frame basis. It then provides real-time image processing that allows the addition of text and graphic overlays, as well as additional post processing features such as sharpen, lighten, rotate, picture in picture and more.

Minimum Requirements:
486 PC (DX33Mhz or better)
8 MB RAM
Windows 95 or NT
14.4Kbps or 28.8 Kbps modem
Standard Internet connection
Video capture card or device

MICROSOFT NETMEETING FOR WINDOWS 95

Version Number: 2.0 Beta 4
Byte Size: 2,622,656
License: Freeware
Author: Microsoft
Home Page: www.microsoft.com/netmeeting

Microsoft NetMeeting enables real-time voice and data communications over the Internet. This includes the ability for two or more people to share applications, transfer files, view and illustrate a shared clipboard, whiteboard, and chat, all over standard connections.



NetMeeting includes support for international conferencing standards and multi-user application-sharing and data conferencing capabilities. Multi-user data-conferencing support allows two or more users to work together and collaborate in real-time over the Internet or corporate intranet using application sharing, whiteboard, and chat. One great feature of NetMeeting is that application sharing functions for all participants, whether or not they have a local copy of the shared application.

Minimum Requirements:
For video : 28.8 Kbps modem, ISDN or better
For audio-only, will work effectively over a 14.4 Kbps modem
Windows 3.x Software



WINDOWS 3.X SOFTWARE

ENHANCED CU-SEEME 16-BIT

Version Number: 2.1.1
Byte Size: 5,269,878
License: Shareware
Also Available: Windows 95, 3.x and Macintosh
Author: White Pine
Home Page: www.cu-seeme.com

Cornell University originally developed CU-SeeMe, the grandfather of Internet video applications. Now it is available as a commercial software package developed by White Pine Software. Enhanced CU-SeeMe offers all of the same functionality as the original version with a ton of solid new features. Enhanced CU-SeeMe allows for real-time person-to-person or group conferencing that allows you to conference with up to 8 people, and an unlimited number of audio connections. Like Microsoft NetMeeting, it also has full-color video, audio, chat window, and white board communications.



Enhanced CU-SeeMe will work over any TCP/IP network allowing users to communicate in glorious 24-bit true color, or 4-bit grayscale for the bandwidth conscious. Available for Windows 95, Windows 3.x and Macintosh platforms, Enhanced CU-SeeMe also has the ability to be launched directly from web pages within your favorite web browser.

Unfortunately, one of the few drawbacks to Enhanced CU-SeeMe is that the frame rates for connections below 28.8 Kbps are not that great. If you do have a 14.4 Kbps modem, it is recommended that you only use this package for audio conferencing.

Minimum Requirements:
For video 28.8 Kbps modem, ISDN, or better
For audio-only, will work effectively over a 14.4 Kbps modem



MACINTOSH SOFTWARE

WEBCAMTOO

Version Number: 1.4
Byte Size: 317,696
License: Shareware
Author: Binky Multimedia Corporation
Home Page: www.mmcorp.com/~binky/webcamtoo

WebCamToo is a fully functioning, high-performance live video and web server. Not only does it enable you to publish web pages on your Mac with relative ease, it functions extremely well serving live video images. This software is designed to be very easy to use, requiring minimal effort to get started.

Performance wise, one could not ask for a better solution. Taking advantage of the Apple platform to its fullest, webCamToo handles a lot of simultaneous video streams without slowing down the server. Not only will it continue to serve the live video with a great frame rate, it also leaves enough computer resources free to allow you continue using the machine for other purposes.

Wintel users need not despair, a PC version is under development, slated for release sometime this summer.

Minimum Requirements:
WebCamToo is distributed as a FAT binary, meaning it will work on both 68K and PowerMacs. If you want to support the Speech features then you need to have the Speech Manager installed. The application requires a minimum of 2 MB of memory, MacTCP 2.0.6 or Open Transport and QuickTime. ◆





ISP$ MARKET REPORT

Paul Stapleton

ARE DIAL-UP SUBSCRIBERS WORTH $280 PER HEAD?

Are dial-up subscribers worth $280 per head? One of the latest and biggest ISP deals says so.

But before you multiply any subscriber base by a given number, it pays to collect real performance data, look at comparable industry events and make sure your assumptions are well grounded. After all, this is only one deal; and it has some interesting, and unique, aspects.

In June 1996 MindSpring Enterprises, Inc. (NASDAQ:MSPG) (www.mindspring.com) agreed to pay up to $21,129,000 for up to 100,000 dial-up accounts and a customer service facility with 75 employees called the Harrisburg Facility. The seller was PSINet of Herndon, VA (NASDAQ:PSIX) (www.psi.net). Under the terms of the agreement the subscribers were valued at $200 each.



However, on March 3, 1997, MindSpring made an SEC filing which outlined the final terms of that purchase agreement. MindSpring would pay $12.9 million for 42,000 dial-up subscribers and the Harrisburg Facility. The Harrisburg Facility was deemed to be equal to its net book value of $1.1 million The 42,000 subscribers were valued at $11.8 million or $280 per subscriber.

So what caused the change from $200 per subscriber to $280?



To further confuse everyone, how come several other deals done by MindSpring in 1996 were for less than $120 per subscriber? The largest acquisition added 4,500 subscribers to the MindSpring roster when it bought nando.net (www.nando.net) of North Carolina.

Charles M. Brewer, CEO of MindSpring, is not a dumb man. He has a Stanford MBA. He has probably been involved in as many ISP merger and acquisition deals as anyone. Over 40 percent of MindSpring's 125,000 subscribers are a result of acquisitions made in 1996 and 1997. And MindSpring intends to do more deals. They have spent a lot of time thinking about what one should spend to acquire a subscriber base. Their opinions are literally worth millions.

The answer might lie in the special relationship MindSpring has with PSINet coupled with some aspects of the deal. In short, the $280 might not really be $280. One dollar today is worth more than one dollar next year, especially when you only have to put a nickel down.

Some background: MindSpring Enterprises, like EarthLink Network (NASDAQ:ELNK) (www.earthlink.net) which has a similar operation and strategy, focuses on serving individual subscribers nationwide. MindSpring adds value through its customer service.



They wrap it up nice and pretty in a hip brand ... but basically they handhold individuals interested in getting connected to the Net. (Sound familiar to anyone out there?) After they get online, MindSpring offers a number of pricing plans including **$19.95** per month for unlimited access. The real value of these companies lies in their subscriber accounts. They have no real hard assets.

MindSpring leases the majority of its network infrastructure, over 200 POPs, from PSINet. The same PSINet from whom they bought the dial-up accounts. PSINet manages a nationwide backbone and over 320 POPs. In 1996, PSINet made a strategic decision to focus on business customers and wholesale services. MindSpring is a large, long-term customer.

In the MindSpring-PSINet deal several elements might warrant MindSpring paying a higher price per subscriber.

- Without the PSINet acquisition MindSpring is not a national ISP and does not do an initial public offering (IPO). The PSINet deal gave MindSpring

After bouncing back and forth between finance, publishing and the Internet, Paul Stapleton has landed squarely in the middle. He is Managing Director of Stapleton & Associates, an Internet focused financial consulting firm. His clients include major players as well as start ups and middle market companies in media, telecomm and software.

Paul Stapleton is also editor of *ISP Report* (to subscribe, **e-mail** ispreport@mediabiz.com or call **303-271-9960** or fax 303-271-9965; annual rate is $195; sample issue sent on request) the newsletter of record for financial activity in the ISP industry and publisher of *The Digest of Internet Financing*, (www.stapes.com) a web site and newsletter commenting and reporting on deals that link the buy side and sell side via the Internet. Paul welcomes comments and suggestions at paulstapes@aol.com. He lives in Boulder, CO with his lovely new bride.

the ability to move to the high ground while others debated whether there was a hill worth taking. Call me crazy but a national ISP is a valuable asset some large telecom may someday be interested in buying.

- MindSpring only put down $1 million in cash to acquire the subscriber base. Ultimately that turned out to be an 8% down payment. Two notes were issued for the remaining monies owed, to be paid after the IPO. MindSpring acquired control of 42,000 accounts for $24 per head. For $1 million, they got a shot at building a national ISP franchise.
- MindSpring only paid for subscribers that actually stayed with them. This is the same as buying a low churn subscriber base.
- The Harrisburg Facility is probably worth more than net book value of $1.1 million. A functioning, sizable service operation is worth more than the depreciated value of the phones, wires and hardware it uses. Certainly MindSpring would have been hard pressed to acquire and keep so many new subscribers without the capability of this facility.
- There is a long term network services agreement under which PSINet is MindSpring's network. PSINet bears the upgrade costs, manages the technology transitions, keeps the pipes running. MindSpring gets a volume discount price per unit. MindSpring may have widened its contribution margin per subscriber with this deal. (Remember, MCI became a big company with a respected brand name reselling AT&T long-distance.)

Given a chance to become a national ISP with a low churn subscriber base, what would you pay per subscriber? Throw in a customer service center at cost and a long term network solution, what can you afford to pay per subscriber? Did PSINet and MindSpring each get a good deal? In March, MindSpring and EarthLink had market capitalization of approximately $50 million and $70 million respectively. That means investors are paying around $400 and $255 per subscriber respectively. The reason for the difference between those two numbers might be worth a look, too. See you next month. ◆

Symbol	Exchange	Company	Price March 12, 1997	Price April 10, 1997	Monthly Price Change	Market Capitalization (millions)
AOL	NYSE	America Online Inc.	$44.25	$46.63	$2.38	$4,382.14
BBN	NYSE	BBN Corporation	20.13	17.00	-3.13	357.22
CSRV	NASD	CompuServe Corporation	10.13	11.75	1.63	1,088.05
DIGX	NASD	DIGEX Incorporated	10.63	7.25	-3.38	81.82
ELNK	NASD	Earthlink Network, Inc.	10.69	10.50	-0.19	99.14
IDTC	NASD	IDT Corporation	6.00	5.25	-0.75	109.42
WWW	TSE	iSTAR Internet inc.	2.14	1.61	-0.53	30.36
MSPG	NASD	MindSpring Enterprises, Inc.	8.25	7.88	-0.38	58.87
NETC	NASD	NETCOM On-Line Comm. Svcs	9.23	9.88	0.64	114.86
OZEMY	NASD	OzEmail Limited	4.00	6.50	2.50	66.30
PSIX	NASD	PSINet Inc.	8.50	6.94	-1.56	277.99
RMII	NASD	Rocky Mountain Internet, Inc.	7.13	2.06	-5.06	7.99
		INDUSTRY AVERAGE	11.83	11.26	-0.57	*TOTAL* 6,709.21

Source: ISP Report, Stapleton & Associates, Company Press Releases and Financial Statements

ISPs: Looking For A Remote Access Server That Is Faster, More Reliable, & Less Expensive?

Look no further! Computone's IntelliServer *PowerRack* is exactly that! In comparison to Livingston's Portmaster, the PowerRack has a per port capacity of *921.6Kbps* (Portmaster -- 115.2Kbps), the PowerRack can support **16-64 PPP lines** (Portmaster -- 10-30), the PowerRack's average price per port is $60 for 64 ports (Portmaster -- $97 for 30 ports), and the PowerRack has a **5-year warranty** (Portmaster -- 1 year), FREE lifetime technical support and software upgrades, and a 30-Day evaluation option.

The PowerRack also has the standard feature list: dial-in/dial-out access, a powerful RISC CPU, Ethernet connectors, ISDN capability, PPP, SLIP, CSLIP, *bootp*, *rlogin*, *telnet*, reverse *telnet*, PAP/CHAP authentication, RADIUS II, RIP II, SNMP MIB II, subnet routing, IPCP DNS exts. for Windows 95, and IP filtering.

PowerRack user and Internet Service Provider Michael Behrens, of InterNet Kingston (mbehrens@kingston.net), commented, "The PowerRack is an attractive product, both in its ability to do the job well and to do the job. . . cost effectively. Port for port costs are significantly lower than the Livingston Portmaster. The product lives up to its name. . . performance under load is exceptional! The PowerRack also offers a significant feature for feature comparison against the available competition (i.e. Livingston Portmaster). And, technical support was extremely knowledgeable and responsive."



COMPUTONE Corporation
www.computone.com
1100 Northmeadow Pkwy, Roswell, GA 30076
(800) 241-3946 x280 or (770) 475-2725 x280

NEW *POWERSURFER* (921.6K ISDN MODEM!) - CALL FOR DETAILS!

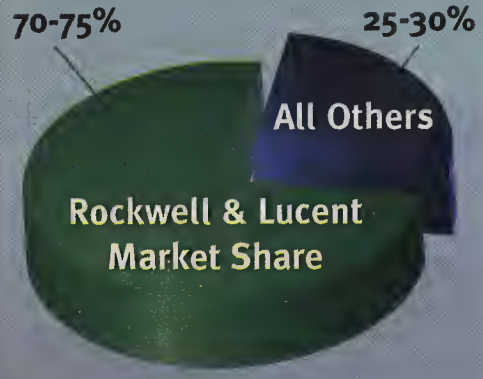
K56flex is here...

70-75% of the Modem Market Use Rockwell & Lucent

K56flex Modem Chip Manufacturers
Rockwell
Lucent

K56flex Modem Manufacturers
Best Data
Boca Research
Diamond Multimedia
Global Village
Hayes
Motorola
Philips
TDK Systems
Xircom
Zoom
Hundreds of Others

K56flex PC Manufacturers
Acer
AST
Compaq
HP
Toshiba
Many Others



Source: Dataquest (7/96)

Digital Access Concentrator Vendor Support
(PRI port installed base)

Vendors	*PRI ports	Market Share	Support K56flex	Support USR x2
Ascend	2,243,000	50%	Yes	
Cisco	249,000	9%	Yes	
USR	162,000	6%		Yes
Shiva/Spider	96,000	3%	Yes	
Cabletron	45,000	1%	Yes	
Gandalf	41,000	1%	Yes	
Total Market Share			**94%***	**6%***



The only way to guarantee the full 56 Kbps of throughput on the downstream connection is with an ISDN PRI line at the ISP POP. K56flex partners own 94% of the installed base of ISDN PRI ports, making K56flex the obvious choice!

Source: Del 'Oro Market Research (1/97 Report)

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Ride the wave!

Millions of new K56flex client modem buyers will be looking for K56flex-capable POPs.

Become an Ascend K56flex ISP partner, get listed in the K56flex ISP POP Directory and ride the wave!

Client modem manufacturers are ramping up to support over 1 million K56flex modem shipments a month. They are launching $50 million in promotions to draw millions of buyers to their K56flex-capable modems. These buyers will also be directed to Ascend's ISP K56flex directory for a referral to a K56flex-capable Internet Service Provider. This directory will be available on the web, in retail stores across the US and listed in computer publications nationwide. Apply to participate, get listed in the directory and start receiving requests from the first of many new K56flex subscribers!

How ISPs can participate

1. Visit Ascend's web site for information on Ascend's new MAX™ K56flex-compatible products (lowest $/port in the industry!)
2. Upgrade or buy an Ascend MAX with Series56™ Digital Modems (K56flex-compatible)
3. Submit the application form for participation in the ISP K56flex Directory
4. Upon acceptance of your application, you will be listed in the Directory located on Ascend's web site (updated nightly)

Details and application forms are available on Ascend's web site: http://www.ascend.com/isp/ or call 1.800.621.9578, Pre-Sales Technical Product Consulting

Apply before June 1 and receive FREE K56flex client modems for demonstration!

ASCEND

Remote Networking Solutions That Work.™

K56 FLEX



By Vito Echevarría

Until recently, Americans' image of Mexico was one of a poor, under-developed country dominated by sombrero-wearing peasants and banditos in a stereotypical image reinforced by the cartoon character "Speedy Gonzalez." Mexico's image was of a place where it's not even safe to drink the water.

That image, however, made a 180-degree turn in 1993 when lobbyists in Washington along with President Bill Clinton pushed for passage of the North American Free Trade Agreement (NAFTA) between Mexico, the United States, and Canada. Lobbyists showcased Mexico's powerful industries run by a sophisticated Ivy League business elite. Oil giant PEMEX and satellite-driven media outlets like Televisa were ready to become major trading partners with the U.S. and transform the North American marketplace. The realization that Mexico had a noteworthy middle and upper class— a market in which even Perrier water and Häagen-Daas ice cream could be sold—was a decisive factor that sold NAFTA to the American business community.

One manifestation of NAFTA, after its implementation in early 1994, was the further industrialization of Mexico. TVs, VCRs, apparel, electronic components, and other appliances are now being mass-produced in Mexico (albeit for sale into the U.S. market, not for middle and upper class Mexicans).

Another result of NAFTA has been the growth of the Internet in Mexico. ISPs are emerging and commercial web sites, which are dedicated to making NAFTA a reality for as many businesses as possible, are popping-up as well.

MEXICAN BUSINESS-RELATED WEB SITES

NAFTA NET (`www.nafta.net`)

This web site, which touts itself as "an electronic commerce port-of-trade for business owners and entrepreneurs," is a valuable resource for those wanting to learn more about NAFTA and how U.S. businesses of all sizes can benefit in the Mexican consumer market.

There's a "Web Consulting Division" (`www.nafta.net/nnw3`) that advises businesses on how to set up marketable commercial web sites fit for the NAFTA marketplace. The "NAFTA Net Market" (`www.nafta.net/market.htm`) has various links to Internet marketing resources, as well as Internet advertising and business guidelines.

The web site's "News Links" section (`www.nafta.net/news.htm`) has links to major news sources like the *Los Angeles Times*, the *New York Times*, the *Economist*, as well as the American Stock Exchange. For those wanting to keep tabs on what's happening in Mexico, there are links to Mexican news publications like *El Economista*, *Reforma*, *El Norte*, and even the Chilean weekly news link Diario Electronico COPESA. There are also other financial news links — from the

Chicago Mercantile Exchange to the Standard and Poors 500 Index Graph, and even weather and travel information.

The "NAFTA Net Communiques" section (www.nafta.net/analysis.htm) has various links to in-depth articles written by consultants and attorneys analyzing legal aspects of doing business in Mexico. It focuses on daily business within Mexico under NAFTA — touching on international, employment and environmental law.

In the "NAFTA Countries and the Americas" section (www.nafta.net/naftacos.htm), there are more business-related links on all three NAFTA countries. For example, it has information for Canadian professionals planning to migrate to the U.S., and market reports on software packages for personal computers in Mexico.

In addition to various business links that are active in the NAFTA marketplace, there's an interesting link to one of this web site's sponsors. *Mexico Business Magazine* (www.nafta.net/mexbiz) prints in-depth, illustrative articles on Mexico, including material on the country's culture and consumer trends. It features stories on Mexico's technocrats and captains of industry — from media baron Emilio Azcárraga and Gigante supermarket chain king Angel Losada Moreno to President Ernesto Zedillo himself. For those wanting to know, for example, what U.S. consumer products Mexico's middle and upper class "Generation Mex" youth are buying, or even the ups and downs of selling U.S. milk in Mexico, this is *the* magazine to check out.

MEXICO INFORMATION CENTER FOR NORTH AMERICA (www.mexico-trade.com)

This web site is maintained by the Los Angeles office of Bancomext, which is the Mexican Bank for Foreign Trade. It explicitly describes itself as a "one-stop Mexico Information Center for U.S. firms seeking or actively doing business in and with Mexico."

Among other portions of this web site is the "Mexico Business Opportunities" section (www.mexico-trade.com/table.html#contents), which has a lengthy table of contents for investing in Mexico under NAFTA. It details Mexico's political, legal, economic, judicial, and financial sectors. More technical aspects of doing business with Mexico under NAFTA (zoning, environmental regulations, competition law, consumer protection, etc.) are also covered.

Mexican government agencies and institutions are listed at www.mexico-trade.com/govt.html#agencies. This section has links to the Banco de Mexico (www.quicklink.com/mexico/bm/bm1.htm) — which provides data on Mexico's economy (including balance of trade, international reserves, interest rates and other information), the Mexican Stock Exchange Bolsa Mexicana de Valores (http://quicklink.com/mexico/bmv/bmv1.htm), the Ministry of Finance and Public Credit (www.shcp.gob.mx), the Office of the President of Mexico (www.quicklink.com/mexico/presidency.htm), and the National Institute of Statistics, Geography and Informatics (www.inegi.gob.mx).

There's also a section called *Information on NAFTA* (www.mexico-trade.com/nafta.html#norte) — once again providing links to more information on American companies doing business with Mexico under NAFTA — mostly from the U.S. government and legal sources.

This web site also has links to Mexican exporters; business opportunities; universities, research centers and institutions that cover NAFTA-related issues; and legal resource/information on Mexico and Latin America. It also links to Mexico Trade Commission offices around the world.

MEXICAN INTERNET SERVICE PROVIDERS

As mentioned before, the NAFTA marketplace has helped create the demand for Internet services in Mexico. As a result, there are at least 100 ISPs in Mexico. CompuServe, with its 16,000 subscribers, commands roughly 45 percent of Mexico's Internet. However, the country's telecommunications infrastructure still needs to be upgraded before it can adapt to the technological demands that go with use of the Internet. Frustrated Mexican businesses have been switching ISPs due to poor service, slow connections, and lost e-mail. CompuServe has taken the lead in the Mexican market simply because of its superior Internet infrastructure.

SOME ISPs IN MEXICO

(Note: US$1 = Mexican Pesos $7.90)

Caribe Net, S.A. de C.V. (www.caribe.net.mx)

This ISP, serving the Yucatan tourist town of Cancún and outlying areas, offers typical Internet services like e-mail, web access, 33.6 Kbps connections, ISDN, HTML and Microsoft Front Page web design courses, and development of multimedia software on CD-ROM.

Services:

Installation	US$18.99
20 hours (one personal page, e mail box)	US$15.19 per month
Unlimited personal access (one personal page, e-mail box)	US$25.32 per month
Unlimited corporate access (one personal page, e-mail box)	US$30.38 per month
Tourist account (e-mail only)	US$2.00 per month
Student discount	20 percent

Contact:
Juan Carlos Alcaide/Director
Tel.: (52)(98) 84-9005
Fax: (52)(98) 84-7664
E-Mail: webmaster@mail.caribe.net.mx

CompuServe Mexico (www.compuserve.com.mx)

This well-known American ISP offers subscribers (throughout Mexico — from Chihuahua to Mexico City to Chiapas) its unique package of services, which includes access to the CompuServe Information Service (news, publications, sports, shopping) and network service (Frame Relay, X.25, leased-lines, Intranet), as well as typical Internet services like e-mail, web access, FTP, Telnet, IRC, and Gopher.

Services:

3 hours per month	US$7.59 plus US$1.90 per additional hour
7 hours per month	US$12.66 plus US$1.90 per additional hour
Unlimited access	US$35.44 per month

Contact:
Samuel Robles/Director Strategic Alliances
Tel.: (52)(5) 629-8199
Fax: (52)(5) 629-8198
E-Mail: 74774.330@compuserve.com

SPIN-Internet México, D.F. (www.spin.com.mx)

This Mexican ISP is CompuServe's main competitor. It has been around since 1987, when it was in the business of developing computer software. In 1988, SPIN set up Mexico's first BBS — known as *Microtel*. Two years later, SPIN was officially inaugurated. To this day, SPIN has the largest BBS in Mexico. Javier Matuk, president of SPIN, wrote about Mexican

BBSs in ***Boardwatch*** in 1992. Also that year, SPIN set up an Internet e-mail service and put itself on the World Wide Web in 1995.

The Internet services SPIN offers includes e-mail, web access, Gopher, and Telnet.

Services:
Installation .....US$10.76
Cuenta Oro (16 hours per month).....US$16.46 plus US$1.27 per additional hour
Cuenta Platino (40 hours per month)..US$26.58 plus 89-cents per additional hour
Cuenta Diamante (unlimited) .....US$39.24 per month
Cuenta Empresarial (100 hours per month. Corporate e-mail boxes).....US$49.37 plus 51-cents per additional hour
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03400 México City, D.F.
MEXICO

Tel.: (52)(5) 628-6220
Fax: (52)(5) 628-6210
E-Mail: webmaster@spin.com.mx
jmatuk@spin.com.mx (Javier Matuk/President of SPIN)

Internet de Mexico S.A. de C.V. (www.internet.com.mx)

Internet de Mexico was one of the first ISPs in Mexico. It only covers the metropolitan area of Mexico City and has 6,000 subscribers. It offers 33.6 Kbps dial-up connections, e-mail, web access, newsgroups, Telnet, FTP, and web page design.

Services:
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Contact:
Paseo de Echegaray 3 - 206 Naucalpan
Estado de México, MEXICO 53310

Tel.: (52)(5) 360-2931
Fax: (52)(5) 373-1493
E-Mail: webmaster@mail.internet.com.mx

Internet de Juarez S.A. de C.V.
(http://sirius.interjuarez.com)

Internet de Juarez covers the state of Chihuahua and the border town of Juarez (adjacent to El Paso, Texas). It offers an array of payment packages, along with courses, additional e-mail boxes, and technical support. Unlimited access is available for evening hours (except for those using the Basico service).

Services:
Installation for hourly accounts .....US$25.32
Basico (12 hours per month).....US$18.98 per month plus US$1.90 per additional hour
Platino (20 hours per month) .....US$30.38 per month plus US$1.52 per additional hour
Oro (30 hours per month) .....US$37.95 per month plus US$1.27 per additional hour
Empresarial .....US$44.30 per month
(60 hours per month. 2 e-mail boxes) plus 37-cents per additional hour

Installation for Diamante account .....US$37.97
Diamante (unlimited).....US$50.63

Installation for Línea .....US$734.18

Exclusiva account
Línea Exclusiva (unlimited) .....US$189.87 per month

Contact:
Tomás Fernández
#7940, Suite 201
Centro de Negocios Torres Campestre
Ciudad Juarez, Chihuahua, MEXICO

Tel.: (52)(16) 29-30-51
Fax: (52)(16) 29-30-50
E-Mail: internet@nova.internetjuarez.com

MEXICO'S BACKBONE PROVIDERS

There are four major backbone providers in Mexico:
- UNAM — Universidad Nacional Autónoma de Mexico — (http://serpiente.dgsca.unam.mx)
- Avantel (www.avantel.net)
- ITESM — Instituto Tec. de Monterrey (http://uninet.mty.itesm.mx)
- Optel Network (http://dns.optel.net)

SPIN's President, Javier Matuk says that the major ISPs in Mexico use different backbone providers. His ISP connects to the Internet through UNAM and Avantel. Infosel uses ITESM and Internet de Mexico uses the Optel Network. CompuServe uses its own network. Matuk calls Optel is "the Mexican version of Sprint."

UNAM is perhaps the largest and oldest backbone in Mexico. It provides Internet connectivity to government agencies and universities. Carlos Chávez, of the Mexico City ISP Tees Net Corporativo, believes that UNAM connects almost 50 percent of Mexico's Internet users.

But, unless UNAM updates its technology, it is likely to lose business-related users because of its notoriously slow connection rates. The major Mexican phone company, TELMEX, and other private firms are likely to exploit UNAM's slow connections as they begin to compete as backbone providers. College students, however, have little to complain about since they get Internet service for free.

In the meantime, investments in the country's telecom infrastructure are rising. Already, TELMEX has spent US$500 million to modernize its technology and service. There's also Marcatel, a new joint venture between Mexican paging company Radio Beep and Texan firms Westel and IXC Communications, that is setting up a fiber-optic network linking 22 cities in central and northern Mexico. The fact that multinational firms like Nissan, Xerox and Texas Instruments are operating plants in the central Mexican state of Aguascalientes, for example, reinforces the urgency to further modernize Mexico's telecom systems. ◆

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WIRELESS Data Development

by Steve Stroh

A COST-EFFECTIVE APPROACH TO WIRELESS INTERNET SERVICES

Wireless access to the Internet is not only practical, but in many ways preferable and cheaper than conventional methods. In some cases it is literally the only way to provide Internet access.

There are some often overlooked advantages to wireless Internet access. One is price. Typically, the wireless modem is purchased outright, and the medium is "free"— no monthly phone line charges. One wireless modem located at an ISP can perform the same job as a bank of modems and phone lines because the wireless modem can accept multiple connections from the same "port"— the antenna. This is especially compelling when you consider that current generation wireless modems operate at 115 Kbps or faster—nearly as fast as a bonded ISDN connection.

Another advantage of wireless Internet access is that the connection is "permanent"—for as long as the computer is turned on and the Internet software is running, anyway. Since no resources are being consumed when the modem is idle (no phone connection tying up a central office switch), there's no reason to "disconnect" from the Internet. Some wireless users run mailing list servers and web servers via their wireless Internet connections.

The biggest advantage to wireless Internet access is, simply, that it does not involve a phone line to connect the user and the ISP. Local telephone companies are making a lot of threatening political noises (I'll leave this discussion to Jack) about the "damage" being caused to telephone networks by Internet users tying up telephone lines, trunking lines, and central office switches for long periods of time. An ISP that provides wireless Internet access simply renders the telcos argument null and void, since wireless Internet users never tie up phone line circuits no matter how heavily they use their Internet connections.

The biggest installed base of wireless Internet access is Metricom's Ricochet network (`www.ricochet.net` main page, `www.ricochet.net/netoverview.html` for an overview of the Ricochet system). Currently operating in numerous corporate and university campuses, and airports in the San Francisco, Seattle, and Washington DC metro areas, Ricochet is a practical wireless Internet system that incorporates very clever technology, some of which is patented and proprietary. The Ricochet system operates in the unlicensed 902-928 MHz band, competing with many other users of that band by employing Spread Spectrum technology. Metricom recently announced its plans to also make use of the unlicensed 2.4 GHz band to increase its system speed to as much as 85 Kbps by late 1998. Ricochet modems, typically velcroed to the back of a laptop PC's screen, connect to "poletop" units clamped onto streetlights. Ricochet poletop units, in turn, forward data to other poletop units (thus the "Ricochet" moniker), and eventually to a "Wired Access Point" for a conventional connection to the Internet. Pricing for a Ricochet modem is typically **$30 per month—$20** Internet service fee and **$10** for rental of the Ricochet modem.

SATELLITE LINKS MONGOLIA

It is now possible for very remote areas to be connected to the Internet via satellite. The trouble with satellite Internet access, however, is that it's not economically feasible to put a satellite system on each building that needs an Internet connection. Often, even low speed modem connections between buildings aren't possible because the phone system is so poor. In many cases a phone system doesn't even exist. That was the situation for Mongolia's capital city of Ulaanbataar until last November. In November 1996, a team from Old Colorado City Communications, operating under a grant from the National Science Foundation, used wireless modems to connect many buildings in Ulaanbataar to the Internet via satellite connection. For full details on getting Mongolia (un)wired to the Internet, check out **http://wireless.oldcolo.com/mongol.htm**.

Old Colorado City Communications is also conducting Field Tests of Spread Spectrum Wireless Modem technology for the National Science Foundation. Old Colorado City Communications' web site is linked to the Internet via wireless modems, and can be found at **http://wireless.oldcolo.com**. One of the more interesting stories there describes a project in Laramie that shares the University of Wyoming's T-1 Internet connection with an ISP and several businesses via wireless. That story is at **http://wireless.oldcolo.com/lariat.txt**.

WIRELESS NEIGHBORHOOD AREA NETWORKS

Consider the possibility of WNANs—Wireless Neighborhood Area Networks. The idea is to bring a T-1, or fractional T-1 to one house in the neighborhood. This is being done a lot now as the "greed for

Steve Stroh learned wireless TCP/IP networking as an Amateur Radio operator (callsign N8GNJ). He's one of the founding members of the *Puget Sound Amateur Radio TCP/IP Group* and is Secretary for *Tucson Amateur Packet Radio (TAPR)*, a national not-for-profit amateur radio research and development corporation that specializes in wireless digital communications.

Professionally, he's a NetWare and Windows NT administrator for a large company. He's done battle with UNIX a few too many times and mostly lost, so now he's learning Linux and BSDi in preparation for his next UNIX challenge. Steve lives in Woodinville, Washington (in the shadow of Redmond) with wife Tina and daughter Merideth. He can be reached at `strohs@halcyon.com`.

speed" has taken hold of online gaming fanatics. To support their habit, the T-1's owner typically throws a Linux box online with a multiport serial card, connects a few modems, and becomes a small-scale ISP. These types of operations are now being referred to as *Internet Co-ops*. By using wireless modems, phone lines are not needed. A small wireless modem gets connected to the T-1, and then mounted on a pole a few feet above the roof line of the house. Neighbors wanting to get in on the fun will buy their own wireless modems and connect to the T-1 at about 115 Kbps, without having the expense of a second phone line. The neighbor's wireless modems must be the same make and model (or known to be compatible), since wireless modem interoperability is rare at the moment.

At a recent University of Washington computer fair, I stumbled onto a Seattle-area ISP, Cortland Electronics (`www.cortland.com`), that has done what I described above on Queen Anne Hill, one of Seattle's more eclectic neighborhoods. Unfortunately, Cortland is a bit stingy with technical information about what wireless product they're using, but you can check out what they are willing to share at `www.queenanne.net`.

OK, so now you're at least half convinced, or maybe just a bit less doubtful about wireless Internet access, and you're thinking that maybe you ought to try it out to get a feel for it. In my opinion, that's a good approach. First question— what to buy? There are dozens, and there will soon be hundreds of wireless data products on the market, and you've almost certainly read of at least a few. There are two systems that I suggest are worth checking out. Both have developed a good reputation with those involved in Advanced Amateur Radio Digital Networking.

The first is FreeWave Technologies of Boulder, Colorado (`www.freewave.com`). Be prepared to actually call a warm body at FreeWave to get up to date, accurate information on their current products—they don't maintain their web page very well. As their web page states: "We don't put our money into fancy web pages, marketing brochures..." and apparently that statement is accurate. FreeWave's DGR-115 is an impressive unit—it's able to move data at 115 Kbps over as much as 20 miles (line of sight) using only 1 watt of power. The DGR-115 has a serial port and is set up with a terminal program, and once set up can work as simply as a null-modem cable. FreeWave will also sell you all the accessories you need—external antennas, coaxial cable, etc. FreeWave's units can operate in multiple modes—as "slaves" (connected only to "master" units), "masters," and "repeaters."

The second is WaveLAN (`www.wavelan.com`) which was originally a product of the "old" NCR, then spun-off to Lucent Technologies. WaveLAN technology has been OEMed to several other companies, so there is, at least, the possibility of limited interoperability. WaveLAN units are typically expansion boards or PC cards. They work well and have a loyal following.

Neither system is cheap—you'll be out a few thousand dollars for two ends of either system. Here are a few tips for those whose RF experience is limited to holding cell phones:

- In real estate, the three most important factors are location, location, and location. In wireless communications, the most important three factors are signal, signal, and signal. Most wireless data systems use frequencies at 902-928 MHz or 2.4 GHz. Wireless data units don't put out much power—about the same as a hand-held cell phone.
- To get any reasonable distances, you'll need to have a clear line of sight between the antennas (you can sometimes get away with some "fudging" on the line of sight, but not much, and not all the time). That usually equates to the higher up the antenna is, the better the system works.
- If you use external antennas, don't skimp by trying to use cheap coaxial cable (this includes using some 10base2 or 10base5 Ethernet cable that you might have laying around) because signals at these frequencies will simply disappear into the cheap coax. Don't use too much coax or the signals will disappear into the long span. You may well end up putting the wireless modem itself, or perhaps the entire PC, close to the antenna.
- From the school of hard knocks department: Don't be tempted just to drill a "quick" hole for the coax through a roof and then just "goop it up" with silicone sealant. It always leaks—Always! EVERY time! DON'T do it! ◆

FCC Amends 2.4 and 5.8 GHz SS Antenna Rules

On April 3, 1997, the FCC eliminated restrictions on directional gain antennas used for Spread Spectrum transmitters operating on the 2.4 GHz and 5.8 GHz bands (`www.fcc.gov/Bureaus/Engineering_Technology/News_Releases/1997/nret7007`). Many manufacturers already manufacture SS wireless modems for the 2.4 GHz band, and it's likely that such existing systems will be quickly updated to make use of improved, highly directional gain antennas—typically beam or dish antennas. The use of such antennas effectively decreases interference to, and interference from other transmitters on a band, and increases the signal to noise ratio between two communicating systems. Improving the signal to noise ratio is an inexpensive way to increase range and performance of a wireless digital data link.◆





ISP TECH TALK by Avi Freedman

MULTI-HOMING WITH AND WITHOUT BGP4

In this month's column we'll explore being "multi-homed"—connected to two or more "upstream" Internet providers. We'll look at why ISPs want to (most argue should) multi-home, and at some of the advantages and disadvantages.

We'll also talk about the Border Gateway Protocol Version 4 (BGP4), the magic protocol that runs the Internet. The myth goes that you must run BGP4 to "multi-home," but this isn't quite true. We'll be talking quite a bit about BGP4 in future columns—for now, we'll cover just the basic concepts.

Before we can get to the meat of the discussion, though, we have to go over some basic topics.

BEING CONNECTED TO THE INTERNET: PART I

To be connected to the Internet, you need to be able to send data (in the form of IP packets) to every valid IP address (host) on the Internet. Equally important is that all of the hosts on the Internet know how to send data to you.

BEING "SINGLE-HOMED"

If you're "single-homed" you are connected to the Internet by one "upstream provider." All of your non-local IP traffic (traffic destined to the Internet) is going to be sent to that provider, and all of your non-local IP traffic that comes from the Internet will come in from that provider.

See Figure 1 for a diagram of a single-homed ISP. Jack's ISP has an Ethernet and one Class C's worth of IP address space. Actually, it's called a */24*, or *slash 24*—IP Blocks that are 256 addresses in size in CIDR address space are called */24s*. For more information on this, please see April's column.

All of Jack's ISP's machines are numbered in the 207.8.130.0/24. Jack's ISP has a router at .1; servers from .2 through .6; and a terminal server at .7. Furthermore, Jack's ISP's dial-up users get dynamically-assigned addresses in the 207.8.130.129 to 207.8.130.159 range, so the terminal server also sometimes responds to those IP addresses. The router in the network knows about this.

First we'll talk about the internal routing of Jack's ISP's network—and review the basics of IP routing—and then we'll talk about how the outside world can get data to Jack's ISP.

AN IP ROUTING REFRESHER

Every machine that talks TCP/IP has an "IP routing table." This routing table tells the machine where to send IP packets. Each IP packet has a **source** address and a **destination** address.

When a machine's IP software sees a packet, it has to figure out where to send it. To do this, it examines the destination address of the packet and matches it against the "best" route in the routing table. To figure out which route is the best one, the IP software tries to find the "tightest fitting"—or "most specific" route. (See Figure 2). The "most specific" route is the smallest possible route which "contains" the destination IP address of the packet in question. The smallest route is the route which represents the fewest number of IP addresses (i.e. a Class C, or /24, is smaller than a Class B, or /16). The biggest route is the default route—also called *0.0.0.0*.

So let's look inside the router 207.8.130.1. There are four routes in the IP routing table:

("Network Number")	("Specificity")	Specificity		
0.0.0.0	0.0.0.0	(/0)	207.106.127.46	Serial0
207.106.127.44	255.255.255.252	(/30)	207.106.127.45	Serial0
207.8.130.0	255.255.255.0	(/24)	207.8.130.1	Ethernet0
207.8.130.128	255.255.255.192	(/27)	207.8.130.7	Ethernet0

Let's say the router gets a packet destined for the web server, 207.8.130.3. It looks at its routing table and finds 207.8.130.0/24 and 0.0.0.0/0 which match 207.8.130.3. 207.8.130.0/24 is the most specific route, so it sends the packet out the Ethernet0 interface.

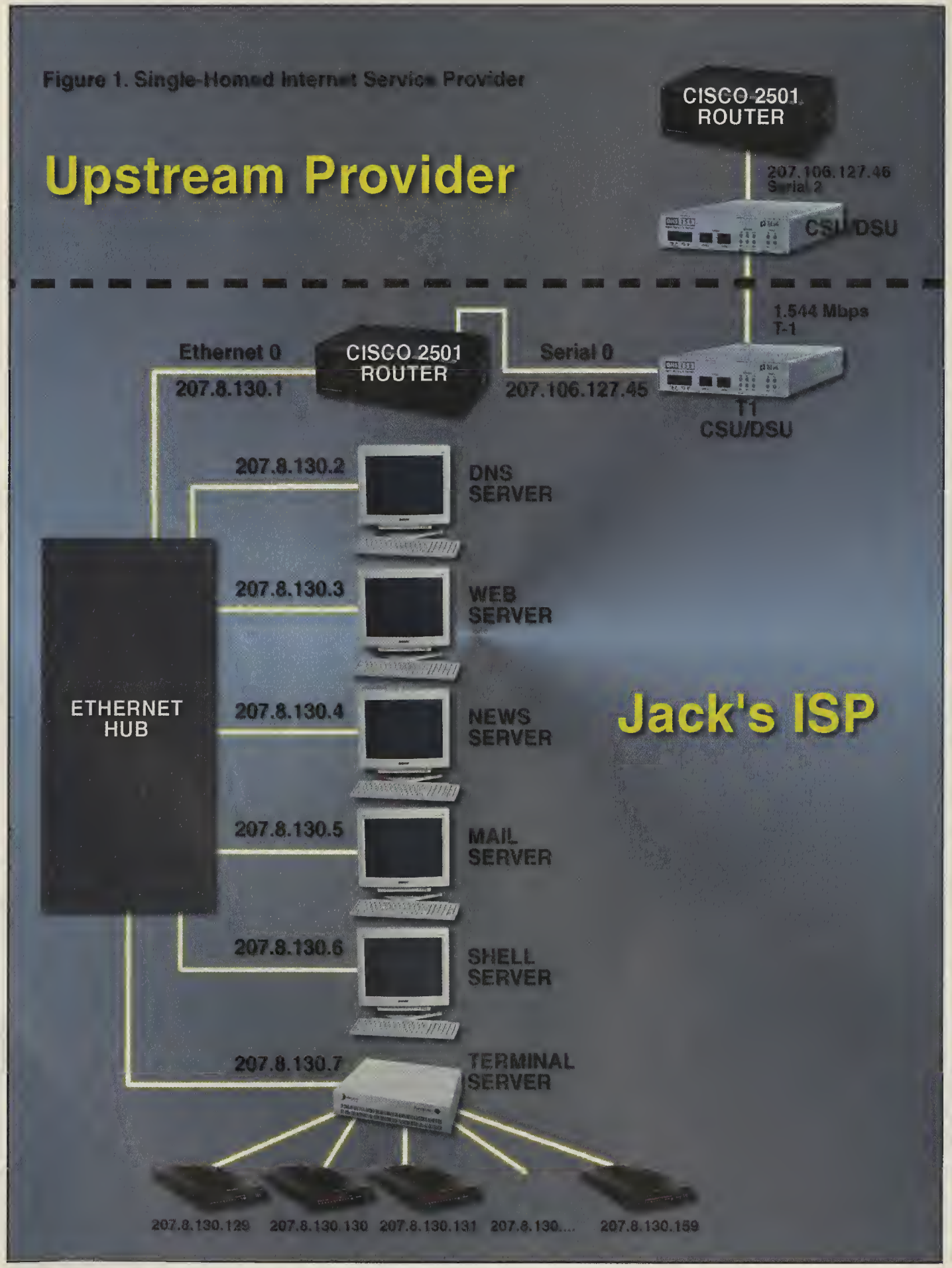
Why did it get this packet? Probably, someone on the Internet is sending a request to the web server and the packet came in via the serial port. Note that it doesn't matter where the packet came **from** or what the **source** IP address of the packet is. Each packet is routed based only on the destination address.

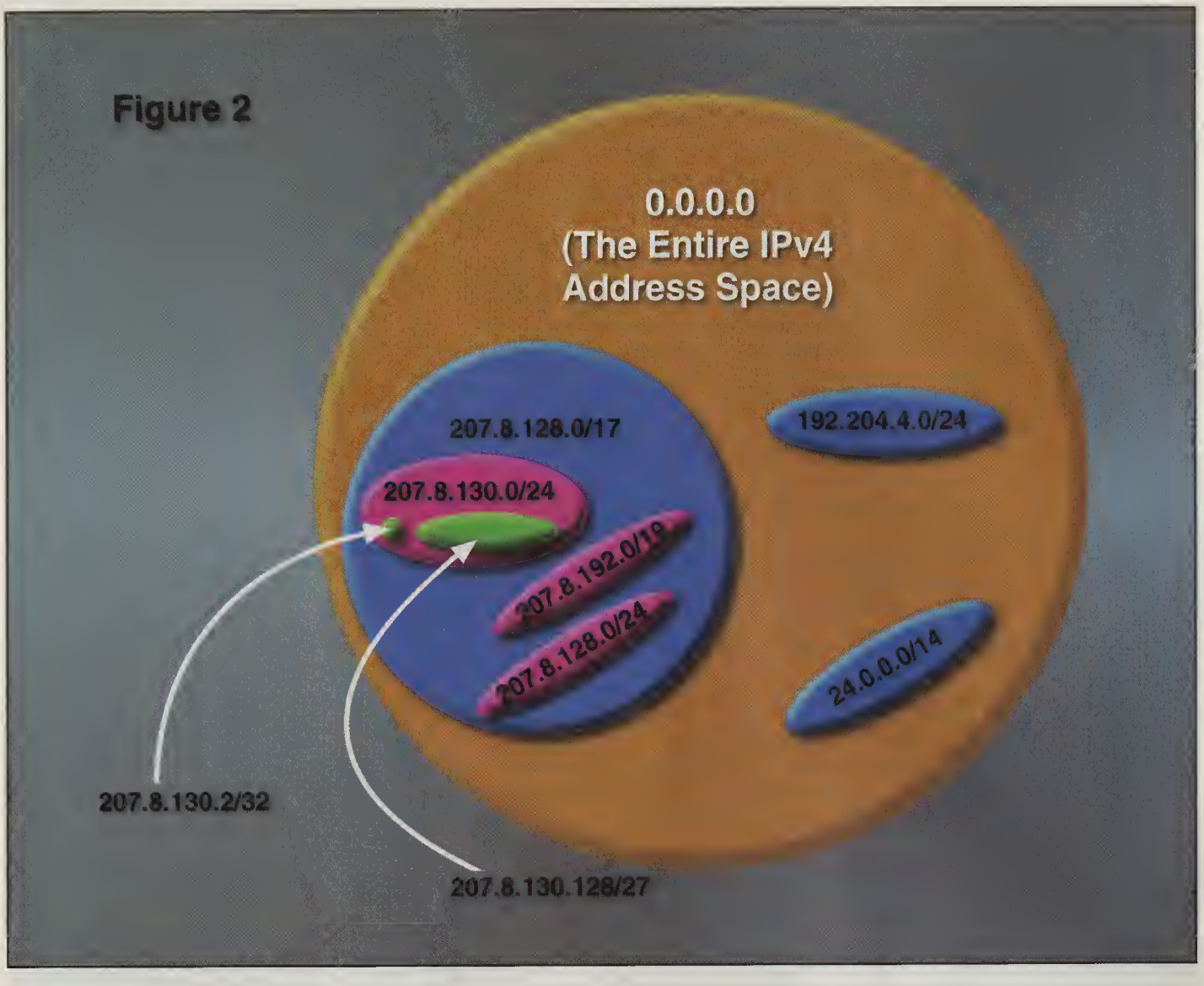
Now let's say that the router gets a packet destined for one of the dial-up users, 207.8.130.134. It looks at its routing table and finds 207.8.130.128/27, 207.8.130.0/24, and 0.0.0.0/0 as matching

Avi Freedman started Net Access, the Philadelphia area's original ISP, in October of 1992. Net Access is currently a regional ISP, with more than 80 downstream Internet providers and dedicated-line customers, and thousands of dial-up and web-hosting customers.

Avi also is Cofounder of a new national ISP, Net Access USA, which focuses on dedicated connectivity for ISPs. For information, see www.netaccess.net.

Avi has been very active on the inet-access mailing list and is a vocal proponent of the continued viability of startup and existing ISPs. He is also on the ISP/C Board as Director at Large. ISPs can join inet-access by sending e-mail to inet-access request@earth.com with SUBSCRIBE in the subject. Avi can also be reached at freedman@netaxs.com or http://www.netaxs.com


Figure 1. Single-Homed Internet Service Provider
Upstream Provider
CISCO 2501 ROUTER
207.106.127.46
Serial 2
CSU/DSU
1.544 Mbps
T-1
Ethernet 0
207.8.130.1
CISCO 2501 ROUTER
Serial 0
207.106.127.45
T1 CSU/DSU
207.8.130.2
DNS SERVER
ETHERNET HUB
207.8.130.3
WEB SERVER
207.8.130.4
NEWS SERVER
Jack's ISP
207.8.130.5
MAIL SERVER
207.8.130.6
SHELL SERVER
207.8.130.7
TERMINAL SERVER
207.8.130.129
207.8.130.130
207.8.130.131
207.8.130....
207.8.130.159



routes. 207.8.130.128/27 is the most specific route, so it looks at the next-hop of that route, which is 207.8.130.7. Then it looks and finds that the best route for 207.8.130.7 is 207.8.130.0/24, which has a next-hop of Ethernet0, so it sends the packet out Ethernet0 to 207.8.130.7.

DEFAULT ROUTING

Each machine on Jack's ISP's network also has a routing table which probably looks like:

Starting IP address Interface ("Network Number")	Network Mask ("Specificity")	CIDR Specificity	Next-Hop
0.0.0.0 Serial0	0.0.0.0	(/0)	207.106.127.46
207.106.127.44 Serial0	255.255.255.252	(/30)	207.106.127.45
207.8.130.0 Ethernet0	255.255.255.0	(/24)	207.8.130.X
207.8.130.128 Ethernet0	255.255.255.192	(/27)	207.8.130.7

Where X is the address of the particular local machine.

Note that you **could** omit the 207.106.127.44/30 route from the local routing tables, but that would force all data destined to the terminal server to "bounce" off of the router at 207.106.127.1. If each local machine isn't specifically told how to get to the addresses 207.8.130.129 to 207.8.130.159 (the 207.8.130.128/37 route), then packets destined to the local modem users will be sent to the router, which will then send them to the terminal server. This means that those packets must traverse the Ethernet twice, which chews up bandwidth on the Ethernet. So it's always better to put all of your local routes into all of your local machines somehow—but as your network grows you may find that this is a pain to do.

Now, for a local server to get to any other machine or modem user on your network, it will have a **specific** route (some route other than the default route) telling it how to get there (the next-hop). But there won't be a route in the routing tables on any of your machines for an IP packet destined to a host out on the Internet—so the route that will "match" packets destined to the Internet is the "default" route—0.0.0.0/0.

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Figure 3. Peering at a Network Access Point to Exchange Traffic and Route Advertisements

STATIC AND CONNECTED ROUTES

How do the routes **get into** the IP routing tables? Some are "connected" routes—they are routes that are associated with the interfaces on the machine. In the case of the router, 207.106.127.44/30 is a connected route associated with Serial0, which has a local IP address of 207.106.127.45. 207.8.130.0/24 is a connected route associated with Ethernet0, which has a local IP address of 207.8.130.1.

The other routes in the routing table had to be inserted "statically" as part of the startup procedure of the router. These "static routes" are "installed" whenever the associated interface is up. 0.0.0.0/0 is a static route with a next-hop of 207.106.127.46 (the provider's router at the far end of the T-1); and 207.8.130.128/27 is a static route with a next-hop of the terminal server on the local network, 207.8.130.128.

A very important note: Most well-behaved routers will delete any routes associated with interfaces that are down. For example, the default route 0.0.0.0/0 and the connected route 207.106.127.44/30 will go away if the connection to the remote provider over the T-1 goes down.

Some of the outbound load-balancing we will talk about later relies on this behavior. But most UNIX machines—and some routers—don't obey this fundamental rule of routing. If you intend to multi-home yourself with a particular router, try pulling the serial cord from one interface. Make sure that the routes associated with that interface go away.

BEING "CONNECTED" TO THE INTERNET: PART II

To be connected to the Internet usefully, every machine on your network must have an IP address that is "reachable" globally. If you have a default route to your router's WAN interface, then it's your provider's job to figure out how to deliver traffic destined to the world.

But an equally (and arguably **more**) important job is to announce to all of the key routers on the Internet that they know how to send packets to you. If even one key router on the Internet doesn't know how to get to you, you do NOT have global Internet connectivity. A router knows how to get to you because it has a route in its IP routing table that tells it how to send data to you—it's the same principle as the IP routing going on in your local network.

ROUTE ANNOUNCEMENTS WITH BGP4: BEING "SEEN" BY THE INTERNET

The key routers on the Internet are the routers in the "default-less core." These routers have **no** default route. If you want to be reachable by all of the hosts on the Internet, there must be a matching route for your IP space in all of these routers.

How do those routes get into those key routers? Different providers "peer" with each other. They have private and public "Exchange Points" where they exchange "route advertisements." These advertisements are "promises" to carry traffic to various sections of the IP space.

Providers use the BGP4 protocol to advertise routing information to each other. Routers at the "border" of various networks ("Autonomous Systems" in BGP-speak) exchange routes with each other via "peering sessions." (See Figures 3 and 4).

Route announcements filter upwards from the edge ISPs, through various transit providers, to the top-level providers. By the time all of this occurs, all of those key routers know about your routes.

WHAT ROUTES GET ADVERTISED FOR YOU WHEN YOU'RE SINGLE-HOMED?

If you have your own address space (old Class C blocks)—or more recent CIDR allocations from the NIC—your provider(s) will advertise those blocks for you as BGP route announcements.

If you are using IP space that you got from your ISP, chances are good that you're part of one of their "aggregates" (or "IP blocks"). Aggregate routes are larger routes that cover multiple /24s. If you have been allocated 207.8.130.0/24, a "whois" on 207.8.130.0 will show you who owns the underlying IP block, and what the specificity is. In the case of 207.8.130.0, a "whois" will show you that it's part of the 207.8.130.0/17 block (half of a Class B in size). If you were to look at the "global routing table" you'd see that the owner of the 207.8.128.0/17 block, Net Access, advertises 207.8.128.0 "as" a /17 (meaning, with the specificity of /17).

If you are single-homed, the only way that anyone in the world can send data to you is through your one provider. So it makes no sense for your provider (Net Access, in this case) to advertise 207.8.130.0/24 as well as 207.8.128.0! Let's say that Net Access advertised 207.8.128.0/17 and 207.8.130.0/24. The more specific route for any of your IP addresses would be

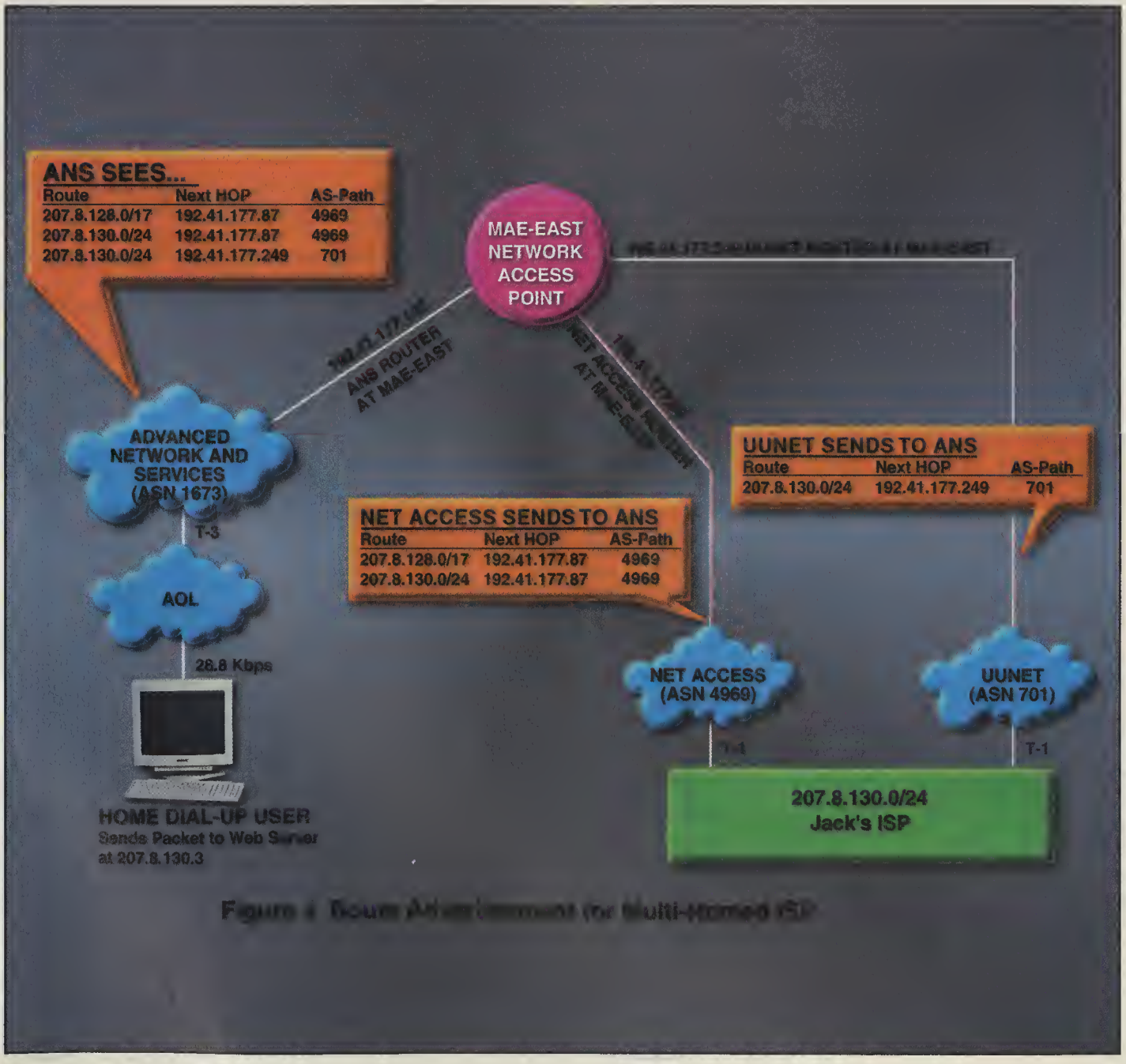


Figure 4 Route Advertisement for Multi-Homed ISP

207.8.130.0/24, so that is the route that would get used. If that route were not advertised, however, 207.8.128.0/17 is the route that would get used. The net effect is the same, and having the more specific route for 207.8.130.0/24 out there is just one more route for every core router to know about and have to spend memory and CPU time on.

If you're multi-homed, however, at least one of your providers will need to announce a specific route to match your blocks. More on this shortly.

MORE BGP TERMINOLOGY

As we said, BGP4 as we're looking at it, is a protocol spoken between Autono-mous Systems to advertise routes. BGP4 is spoken between two routers and routes are exchanged via "peering sessions." Each Autonomous System has an "Autonomous System Number" (ASN). Net Access's is 4969. UUNET's is 701. There are hundreds of ASNs in use on the Internet.

In addition to the usual information (starting IP address, specificity, next-hop information), each BGP route has a property called the *AS_PATH*—the path of Autonomous Systems that the route took from the very first advertising router. It's just a list of the ASNs in the reverse order of advertisement.

Every time a route is advertised by one router to another over a peering session, the receiving router "stamps" the incoming route with the ASN of the remote router by prepending the remote ASN to the beginning of the AS_PATH. When UUNET hears a route from Net Access, for example, it notes that it got the route from AS 4969 (Net Access's ASN).

Remote routers will generally decide which is the best route of multiple BGP routes by picking the route with the **shortest** AS_PATH (that is, the route that has traveled few the fewest providers) to get from start to finish.

REVISITING THE SINGLE-HOMED PROVIDER

Jack's ISP (the average single-homed provider) will typically have one route announcement "out there" for each of its routes. This makes sense—you can only get into Jack's ISP's network by one path—sending data to Net Access.

Jack's ISP's upstream provider must either peer with all of the other key networks on the Internet (so that routes for Jack's ISP get into all of the default-free core routers), or must get "transit" (be a complete or partial customer) of some other providers.

For example, AGIS (ASN 4200) will peer with very few other networks, so Net Access (ASN 4969) must get some Autonomous System who **does** peer with ASN 4200 to advertise Net Access's routes to AGIS, or AGIS's routers will not know about Jack's ISP's (Net Access's) routes.

WHY BE MULTI-HOMED?

Additional bandwidth and redundancy are the two major reasons that ISPs multi-home. Multi-homing (adding another upstream provider) is expensive, costing you at least $1,000 to $2,000 extra per month, so most providers put it off as long as





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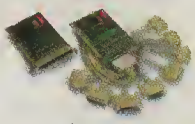
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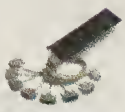
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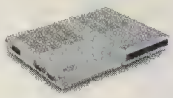
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possible. This is a mistake! In even the smallest areas there is now generally competition among ISPs, and the ISP with the most reliable network can attract customers willing to pay for quality and reliability.

If you've got a T-1 to the Internet and it's running at 70 to 80 percent capacity, then you'll start to see slowness. Or, worse, you could have the dreaded packet loss on your line due to congestion. Your customers will start leaving you in droves if this happens. Additional bandwidth is a major reason that many finally break down and multi-home. But consider this: If you are single-homed you are **completely** dependent on the up-time and quality of your one upstream provider. Also, you're completely dependent on your one border router and your one link to that upstream provider. If any of those components fails you're completely off the Net!

There's only one route out there for you. If your router or T-1 goes down, then your provider's not going to be able to send data to you. And if your provider becomes disconnected from the Internet or has some major internal routing problem, then you're also disconnected from some or all of the Internet.

MULTI-HOMING: ROUTE ADVERTISEMENTS

When you're multi-homed, your routes should be advertised by **both** providers. If you have two or more routes out there for each one of your IP blocks, you can sustain a complete loss of a T-1—or severe problems with one of your upstream providers—and not have your customers notice a thing.



Let's look at Figure 4. In this example, we'll use our friend Jack's ISP, now connected to both Net Access and to UUNET, and a dial-up user on AOL who wants to query a web server on Jack's ISP's network, 207.8.130.3. AOL's Internet provider is ANS, so AOL sends the packet to somewhere in ANS's network. ANS sees three BGP route advertisements for 207.8.130.0:

207.8.130.0/24, from Net Access (ASN 4969); 207.8.128.0/17, from Net Access (ASN 4969); and 207.8.130.0/24, from UUNET (ASN 701).

If those routes weren't there, ANS (and thus AOL) would have no connectivity to Jack's ISP's network. If there was only one route of specificity /24, then there'd only be one "primary" path to Jack's ISP's network. But since there are two routes for 207.8.130.0/24 (also called two *views* of this one route), ANS will choose one of those as the best path and will use it. Incoming load-balancing works on the principle that roughly half of the networks out there will choose one of multiple paths for any network and that the rest will pick one of the other paths. We'll go into more detail on this in future columns, and we will discuss the actual algorithms used by routers and providers to make and tune these decisions.

MULTI-HOMING WITH BGP

If you speak BGP to your providers, then **you** are the one originating the route advertisements that put your Autonomous System on the Internet. You have some degree of control over how those routes are advertised—we'll be talking about methods like AS_PATH padding and changing route specificity in the future.

And you can also take "full routes" from one or both providers and let your router use BGP "selection algorithms" to pick the best path for each outgoing packet. This will generally give you a moderate bump in "quality" of connectivity—perhaps as much as 5 or 10 percent less packet loss to certain destinations.

Also, if you have nothing better to do than tune your connectivity, you can start to fine-tune outgoing data flow. For example, if you notice that one provider has poor PSI connectivity although it's got the best BGP routes to PSI, then all of your PSI traffic is sent out to your other provider.

MULTI-HOMING WITHOUT BGP

But you don't need to speak BGP to have your routes be advertised by both providers. They can do it for you, just as your single upstream provider does it for you when you are single-homed. In this case you are part of **their** Autonomous System for routing purposes, and you have to call them on the phone and ask them to change or add route advertisements for you.

Providers are generally happier to do the work of injecting routes into BGP for you, since it's a bit of work for them to set up a BGP peering session for you and to carefully filter the routes they hear from you over that session.

To control outgoing data flow from your network, all you have to do is add another default route—there's no need to use BGP to take a list of all 45,000 or more routes on the Internet. It's true that you have more control and flexibility if you have those routes to work with, but the difference is usually not that great between selecting the best BGP route and round-robin default-routing.

SO WHICH IS BETTER?

You can get 90 percent of the benefit of multi-homing without speaking BGP yourself. But as long as you're paying for two T-1s, why not take full advantage of them by speaking BGP?

The first problem is that running BGP on your own requires a lot of knowledge (and hopefully experience). Screw-ups in BGP route advertisements can be felt all over the Internet, and are treated very seriously. If you don't know what you're doing you'll wind up with a *less* reliable network instead of a more reliable one.

The second problem is that it takes a fairly expensive router to take full routes from your providers. Each route takes a certain amount of CPU and memory, and the current Internet routing "load" of 45,000+ routes is too much for almost all low-end routers; however, you can take less than full routes—or even just use BGP to announce your routes and still just default-route for outbound traffic—with a smaller router like a Cisco 2501.

So the decision is yours. Most providers will let you speak BGP to them,

but will be somewhat unsympathetic if you misconfigure your end and break your connectivity. On the other hand, there are some advantages to speaking BGP at your end.

For the rest of this column, we'll finish explaining how multi-homing without BGP works.

Next month's column will go into more BGP details and will show you how to safely announce your routes via BGP with router configurations. This can be done even with a low-end router. We will also discuss some of the options that you have for managing the incoming routing information which determines how you send your outbound traffic to the Net.

Now we'll explain both sides of being multi-homed without speaking BGP to your provider. The first is load-balanced default routing, which is the art of getting data out of your network. The second is how your providers advertise your routes for you, which controls how other providers hear your routes—and thus how data flows in to your network.

Keep in mind that these two things (sending data out with default routes and getting others to send data to you based on route advertisements from your providers) are the key to being connected to the Internet.

DEFAULT ROUTING TO MULTIPLE PROVIDERS

If you go from one provider to two, then you're going to already have a default route installed. You have to decide how you want to send data out from your network. Once you've decided what you want to do, you can go about implementing it.

Remember, the default route controls where you send data that is not destined for you local network. So adding default routes is the way you both increase your outbound bandwidth to the Internet and add the redundancy that multi-homing provides.

Let's say that Jack's ISP has his original default route installed. In the configuration mode on his Cisco, he enters:

```
ip route 0.0.0.0 0.0.0.0 137.39.34.65
int s0
ip route-cache
int s1
ip route-cache
```

Now there are two routes (0.0.0.0/0 through 137.39.34.65 with metric 0; and 0.0.0.0/0 through 207.106.127.46 with metric 0) of equal specificity (both are /0 routes) and of equal metric (both have a metric of 0).

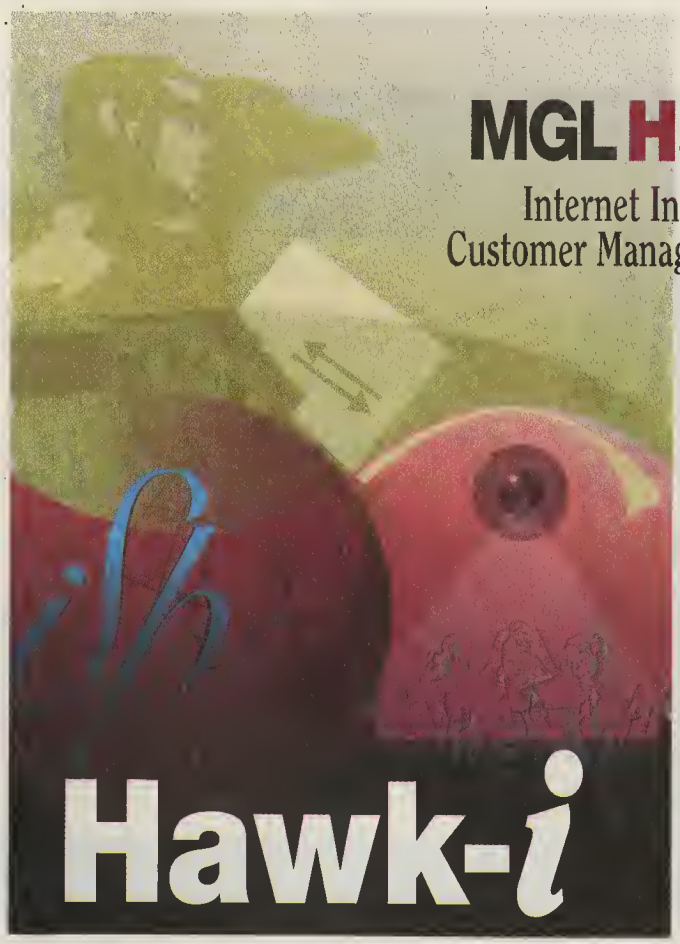
Both routes will now be installed in the Cisco's IP routing table, and the Cisco will now use *both* T-1s for outbound data. If one of the serial interaces goes down (because one of the T-1s goes down), one of the default routes will go away, but one will still be there to make sure your router has a way of sending data out to the Internet.

Also, this example turns on **ip route cache** on both interfaces to ensure that the load balancing is done on a **per-connection** basis rather than by simply sending every other packet out each interface. Note that sending the packets out in a round-robin fashion makes TCP/IP unhappy.

MULTI-HOMING TO THE SAME PROVIDER

Instead of multi-homing to different providers, you can multi-home to the same provider. Net Access, for example,





allows all of their dedicated-line T-1 customers to establish a backup link via the local Frame Relay "cloud." Customers install a backup default route so they'll only use the Frame Relay path if the primary T-1 goes down (since they're not paying for additional bandwidth, only redundancy).

Customers who are happy with their upstream providers might want to run multiple links for added bandwidth or reliability. Sadly, few IP providers are **so** reliable that customers are tempted to do this, but it does happen. Also, paranoia dictates that an Act of God can always strike a particular upstream provider or that provider's POP in a particular city. You almost always get better reliability by multi-homing to multiple providers.

If you do decide to multi-home to the same provider and run two equal-bandwidth pipes into either the same router at the provider's side, or routers at the same POP, you can set **no ip route-cache** on your serial interfaces and things should work well. Why? Because all of your outgoing packets travel almost the same path and have almost the same latency this way.

BEING ADVERTISED BY MULTIPLE PROVIDERS WITHOUT PI-SPACE

We'll use Figure 4 again. Remember April 1997's document on getting provider-independent (PI) space? The reason it's so important to have "your own" ip space is that without it multi-homing is quite tricky and requires a lot of cooperation from your original provider.

Let's say that Jack's ISP is using 207.8.130.0/24. Jack's ISP's provider (Net Access) has 207.8.128.0/17. So Net Access announces only 207.8.128.0/17 to the world. There is no global advertisement for 207.8.130.0/24. In this case, any packet destined to 207.8.128.0/17 will be picked up by the less specific (more general) route 207.8.128.0/17. We talked about this before, when examining how Jack's ISP's routes are seen by the outside world when single-homed. Now Jack's ISP wants to multi-home. So Jack's ISP buys a T-1 from *newprovider*. Jack's ISP sets up BGP with both Net Access and newprovider. Suddenly, the world sees two routes for Jack's ISP:

207.106.0.0/16, advertised by Net Access; and 207.8.130.0/24, advertised by newprovider.

Remember, the most specific route always wins, so newprovider will wind up carrying almost all, if not all, of Jack's ISP's incoming traffic! Certain parts of Net Access's network may actually prefer newprovider's T-1 to get to Jack's ISP! In fact, this won't happen with Net Access's network, but some providers will prefer externally-heard more specific routes to get to dual-homed customers.

This state of affairs gets you **backup** (if newprovider goes down, your data will once again flow through Net Access based on the aggregate advertisement), but doesn't **load-balance** your inbound traffic. To have incoming load-balancing, you need to advertise two routes of **equal** specificity. Even so, inbound load-balancing is tricky and depends on who peers with whom and how different providers "hear" each other—but unless there are two "competing" equal-specificity routes out there for you, there's no hope if inbound load-balancing.

The problem is that most largeish providers use something called *aggregate-address statements*—and they certainly have some sort of filter to keep



the more specific routes floating around inside of their networks from being advertised to the world. Remember, the world only wants to hear about 207.8.128.0/17 if the little, more specific, routes inside of 207.8.128.0/17 are not multi-homed.

So what does Net Access have to do? Blow holes in their aggregation statement. One way or another, it's going to take modifications in Net Access's "border" routers to make incoming load-balancing work properly for Jack's ISP. Net Access may not want to do this. (In fact, Net Access does do this, but some providers don't.) Basically, everywhere that Net Access peers with anyone else (and this is usually at least 5 to 10 places), they have to modify their aggregation statements or other filters to "allow" your more specific route announcement to pass through.

If Net Access blows holes in their aggregation filter using "suppress maps," which we'll talk about in a few columns, then Net Access can announce:

207.8.128.0/17
207.8.130.0/24

And newprovider will announce:

207.8.130.0/24

Thus, Net Access's other customers who "live" inside of 207.8.128.0/17 will still be advertised, but 207.8.130.0 will now have two advertisements at a specificity of /24, so some load-balancing may happen for inbound traffic to Jack's ISP.

This is one reason that it's important to choose a primary provider based on how cooperative they'll be when you want to multi-home.

BEING ADVERTISED WITH PI-SPACE

If you have Provider-Independent (PI) address space, announcing your routes is easier, since you're not a part of anyone else's aggregate block. Examples include old Class C or Class B blocks that you or your customers might have, or newer CIDR allocations that you (or, if you sell to ISPs, your customers) might have.

SUMMARY

We've talked about how the world sees you when you're single-homed and multi-homed, and about what BGP does. We've also talked about how you can be multi-homed effectively without using BGP.

Next month we'll go into more detail on BGP. We'll go through the details of configuring a router to speak BGP to multiple providers—and to announce and receive BGP routes. ◆

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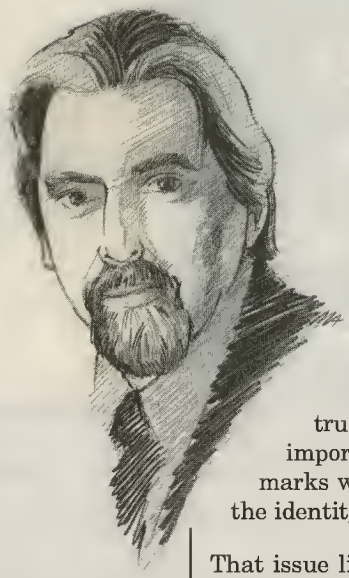
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@INTERNET by Thom Stark

WHAT'S IN A NAMESPACE?

Anyone who dabbles in demonology will tell you that to know a thing's true name is to gain power over it. More importantly, anyone who trifles with trademarks will attest to the importance of defending the identity of your product or service.

That issue lies at the heart of the International Ad-Hoc Committee's February 4, 1997 Final Report which recommends that seven new top-level domains be added to the existing .COM, .EDU, .GOV, .INT, .MIL and .ORG and ISO 3166 two-letter country code domains. The IAHC-proposed new domains:

- **.ARTS** suggested for entertainment and cultural entities
- **.FIRM** suggested for firms or businesses
- **.INFO** suggested for information providers
- **.NOM** suggested for personal names
- **.REC** suggested for entertainment and recreation entities
- **.STORE** suggested for businesses offering goods for purchase
- **.WEB** suggested for World Wide Web-related entities

These domains are designed to be only the first wave of what, by the turn of the century, is envisioned to be a hundred or more new top-level domains, each offered by hundreds of competing registrars.

BACKGROUND

The IAHC proposal, like the IAHC itself (`www.iahc.org`), had its genesis in the National Science Foundation's March, 1992 announcement that it would begin outsourcing domain name and IP number registration. On January 1, 1993, it awarded a contract to run the Internet Network Information Center (InterNIC) to Network Solutions, Inc. (NSI) of Herndon, Virginia. That contract runs through September, 1998 and, among other things, gives NSI the exclusive right to provide second-level registrations in the .COM, .EDU and .ORG domains (the only non-ISO 3166 domains for which there is a commercial market).

In June, 1995, NSI (then recently-purchased by Science Applications International Corporation, a $2 billion consulting firm and defense contractor) announced that it would institute a policy of suspending the registration of any domain name whose validity was challenged on trademark infringement grounds. Although domain registration like IP network assignments had always been free to end users, in September 1995, at the direction of the NSF, NSI announced that it would begin charging $50 per year for registrations in all but the .GOV, .INT and .MIL domains. (thirty percent of the money collected was to go into a trust fund to be used for infrastructure expenditures "for the good of the Internet as a whole," although the mechanism by which disbursements would be made was never satisfactorily defined and, as of April 2, 1997, no distributions have ever been made.)

Reaction to these changes was immediate and vocal. Much of it took place on the *newdom*, *com-priv, ietf* and *domain-policy* mailing lists and on the *comp.protocols.tcp-ip.domains* newsgroup. Criticism centered on the increasing desirability of creating effective competition for the InterNIC and NSI and on the stupidity of NSI's trademark resolution policy.

The trademark issue is a subtle one. Few business people (and fewer ISPs) understand that trademark validity is linked both to particular products or services offered and, in most cases, to the particular geographical area in which those products or services are offered. Thus, for instance, Saturn automobiles and the Saturn game console are each trademarked internationally and neither infringes on the other because no reasonable person is likely to confuse the one with the other. The problem arises because all commercial registrations are currently limited to the .COM domain and only one company can own SATURN .COM. Under NSI's existing dispute resolution policy, should either Saturn maker challenge the other's existing registration, that registration would automatically go on hold until the dispute was resolved in a court of law or via private contract. (In reality, SATURN.COM is, in fact, on hold, and Saturn Technologies Inc. of Chalford, PA, which registered it in May 1994, has lost its 3-year-old web site until the dispute is resolved.)

The debate continued, as Internet debates will, with no resolution in sight until January, 1996, when Paul Garrin launched his name.space alternative registry, (easy enough to do, since the BIND database is just a text file,) with nameservers in five different countries. In April, 1996, Eugene Kashpureff set up his own nameservers, added .EXP .LTD .LNX .MED .NIC and .XXX to the standard top-level domains and began doing business as the AlterNIC. Even though Garrin's and Kashpureff's new domains were only visible to a tiny fraction of the Internet population, (those who set name.space or the AlterNIC as their primary or secondary nameserver), and even though they charged

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money to register in some of them, both found customers for their offerings.

The following month, Jon Postel, Director of the Internet Assigned Numbers Authority, issued a proposal for multiple, exclusive, competing top-level domain name registries he called *draft-postel-iana-itld-admin-00.txt*. It garnered a lot of reaction, some of it positive, much of it negative. In particular, the proposal's suggested **$100,000** fee for each registry was heavily criticized.

At the June 24-25, 1996 annual meeting of the Internet Society Board of Trustees, Postel presented a revised draft for their approval. *Draft-postel-iana-itld-admin-01.txt* exchanged the $100,000 per registry flat fee for a $2,000 per year fee and 2 percent of revenues. It kept the original draft's proposal that up to 50 new registries be created initially, each of which would have the exclusive right to register names in up to three new top-level domains (i.e.—150 new domains spread among 50 registrars the first year). It also proposed that additional new registrars be added at a rate of 30 per year for a period of five years.

ISOC's Board approved Postel's revised draft in principle in its Resolution 96-05:

RESOLVED, that the Board of Trustees of the Internet Society endorse in principle the proposal "New Registries and the Delegation of International Top Level Domains," dated June 1996 by Jon Postel, and approve the role assigned to the Internet Society in this proposal. The Board authorizes Postel, in his IANA role, to refine the proposal to include a business plan for review and approval by the Board.

Internet drafts have the least standing of all "official" Internet documents and the vast majority of them expire without having been implemented. Nonetheless, inspired by Kashpureff's example and by the apparent blessing of ISOC, a number of new registry efforts took shape over the next few months. Among these was Christopher Ambler's Interactive Online Design .WEB registry, and Karl Denninger's MCSnet. Despite the fact that they advertised their services as "experimental," it was clear that both operators expected to be able to continue in business once a formal process was put into place.

This was made evident at a July 31, 1996 meeting between Bill Manning, representing IANA and various interested parties, including Christopher Ambler and his financial backer John Frangie. The meeting was to discuss the criteria by which applicants to run new registries might be evaluated by the ad-hoc committee to oversee the registration process. Afterward, Ambler handed Manning a $1,000 check sealed in an envelope. Ambler maintains that it was clear to Manning that the IODesign check was for fees to be paid to IANA for its formal application to run a registry and that Manning watched him put the check in the envelope. Manning strongly disputes Ambler's account, claiming instead that the envelope was "stacked in to a manila folder" along with notes on the meeting and that he did not discover it until after Ambler and Frangie had left. Ambler does not dispute that Manning returned the check, unopened, to him via certified mail the following day. Postel also put out a widely-disseminated e-mail on August 2, stating, "The suggestion that the IANA is accepting money to reserve new top-level domain (sic) is completely false."

POP GOES THE IAHC

On October 22, 1996, Donald Heath, President of ISOC, issued a press release announcing ISOC's intent to form an International Ad-Hoc Committee to "undertake defining, investigating, and resolving issues" raised by the second Postel draft. Heath promised that the Committee would be made up of "representatives of the large international Internet community." Less than a month later, on November 12, Heath issued a second press release announcing the IAHC's membership.

The Committee was made up of:

- **Sally M. Abel**, a trademark lawyer representing the International Trademark Association (INTA)
- **Albert Tramposch**, senior legal counselor of the World Intellectual Property Organization (WIPO)
- **David W. Maher**, an intellectual property attorney
- **Dave Crocker**, cofounder of the Internet Mail Consortium
- **Geoff Huston**, technical manager of Australia's Telstra Internet

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- **Jun Murai**, president of the Japan Network Information Center (JPNIC)
- **Hank Nussbacher**, an independent networking consultant
- **Perry E. Metzger**, president of Piermont Information Systems Inc. (specializing in security consulting)
- **Robert Shaw**, an advisor on Global Information Infrastructure (GII) issues at the International Telecommunication Union (ITU)
- **George Strawn**, co-chairman of the Federal Networking Council, representing the NSF
- **Donald Heath** as the Committee's chairman

Just over a month after its formation the IAHC released a Draft Specification for Administration and Management of gTLDs. Dave Crocker attributes its aggressive schedule to pressure from unnamed "large ISPs" and certain, mostly unidentified "powerful individuals," specifically including Paul Vixie, maintainer of the Berkeley Internet Name Domain (BIND) software and its standard cache file. Regardless of the sources of the pressure to produce rapid conclusions, it is clear that fear of further and irreparable fragmentation of the root name space drove the process.

The Draft Specification completely reworked the Postel proposal. Instead of an initial 150 new domains, it proposed a mere seven. In place of exclusive registration rights, all new registrars would share registration authority for all seven new domains. The existing TLDs would be excluded and would, at least for the remainder of its contract with the NSF, remain the exclusive province of NSI's InterNIC. The initial group of new registrars would be chosen by lottery from among the pool of "qualified" applicants. A $20,000 partially-refundable application fee would be required. No special consideration would be given to existing operators of "experimental" registries. A Council of Registrars (CORE) would formulate the "necessary contractual, legal, oversight and public policy framework under which CORE and the individual Registrars must operate" and a Board of Trustees would oversee CORE. And all new domain registration requests would be subject to a mandatory 60-day waiting period to permit trademark-related challenges to emerge before the name was activated.

Needless to say, the December 19 release of the Draft Specification created considerable controversy. The official comment period lasted six weeks and, in that time, the IAHC's own mailing list received over 4,000 postings. Other parties submitted commentary and criticism via private e-mail, fax, surface post and telephone calls.

Much of the criticism centered on the closed and relatively secretive nature of the IAHC's deliberations, and on the aggressive nature of its schedule. Some made threats of lawsuits and predictions of dire consequences for the future of the Internet's stability if the Draft Specification were adopted. Others took issue with particular conclusions or mechanisms outlined in the Draft Specification, including the proposed applicant selection process and the screening criteria (especially the financial criteria). Still others, particularly Aveek Datta of Monolith Internet Services International, complained that the Draft Proposal failed to pro-

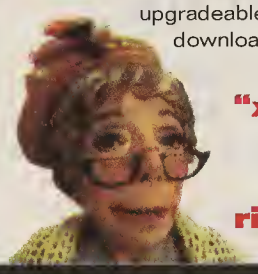
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vide a mechanism for free registrations for individuals and non-profit entities. And, with the exception of the trademark lawyers on the IAHC, almost everyone hated the 60-day waiting period and demanded it be deleted from the final document.

HORTON HEARS THE IAHC

The IAHC reconvened in Switzerland in late January, 1997 to mull over the mass of input on the Draft Specification and produce from it a Final Report. That document, *The Final Report of the IAHC: Recommendations for Administration and Management of gTLDs*, was released four days late, just before midnight on February 4. It differed substantially from the Draft Specification.

It replaced the Draft Specification's Board of Trustees with a Policy Oversight Committee (POC) and made CORE a Swiss-chartered not-for-profit association. The POC was given the power to police the registrars, including the ability to remove them for cause. It was also charged with authorizing additional registrars and additional TLDs and granted authority to modify the minimum financial and business requirements for registrar applicants as circumstances warrant. The POC was to be made up of representatives from the same bodies which constituted the IAHC (and in the same numbers) plus two representatives from CORE and a non-voting member representing the International Telecommunications Union (ITU), which was to act as the Depository for Memoranda of Understanding (MOU). The MOUs, once signed, would create CORE, the POC and a new body, the Policy Advisory Board, which was chartered to provide the POC with input regarding general policy direction for gTLD additions, the oversight of CORE and any amendments to the MOUs.

The Draft Specification's mandatory 60-day waiting period was gone, replaced by a voluntary waiting period for those determined to provide themselves with maximum protection against trademark-related challenges to their domain name ownership. In addition, the *Final Report* mandated that all domain name applicants agree to binding arbitration of any ownership disputes and awarded jurisdiction over that arbitration to Swiss-based Administrative Domain Name Challenge Panels (ACPs) to be administered by WIPO.

There would be 28 new registrars in the initial group and they would be distributed evenly across 7 geographical regions:

- **Africa**
- **The Middle East**
- **Asia**
- **North America**
- **Latin America**
- **Western Europe**
- **Central and Eastern Europe, the Baltic States and the Commonwealth of Independent States**

Any lottery would be conducted on a regional basis, with no lottery taking place in any region with 4 or fewer applicants. It also set up different minimum business and financial criteria for contested and non-contested regions:

	Contested	Non-Contested
Liability/disability insurance	$5,000,000	$500,000
Full-time employee equivalents	10	5
Available capital (including loans)	$500,000	$300,000

It required that all applicants be located in WTO member countries or in countries which were signatories to the Paris Convention for the Protection of Industrial Property. It required that applicants own an existing, reachable second-level domain and that the DNS record for that domain be error-free. It kept the Draft Specification's $20,000 refundable application fee and added a requirement that the applicant pay the non-refundable cost of a third-party credit and business reference check.

The Final Report also set some fairly stringent operational, technical and administrative criteria for applicants. Among other things, it required that they have staff members with demonstrated experience in DNS and router configuration, SQL programming and database administration and UNIX sysadmin duties. It demanded they possess a 24 x 7 x 365 help desk and, prompted no doubt by the legendary unreachability of the InterNIC, an automated call distribution system. It also mandated an applicant have multi-homed or distributed Internet connectivity and what it called "robust" backup and disaster recovery procedures.

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INCOMING!

Unsurprisingly, the *Final Report* was roundly slagged by the alternative registry community. Most complained that it gave no special status to operators of existing experimental registries. Others protested the high bars to entry for smaller businesses which the financial and business criteria presented. Still others abominated the mandatory binding arbitration requirement, viewing it as an infringement on their right to file suit. Aveek Datta refused to support it because it still made no provision for free registration for individuals and non-profits. And, inevitably, some characterized it as an attempt to destroy the alternative registries.

On February 27, after weeks of fruitless threats and pleas, IODesign filed suit in San Luis Obispo Superior Court against IANA, the IAHC, ISOC, Jon Postel, Bill Manning, Joyce Reynolds, Nehal Bhau (all IAHC employees) and Donald Heath (in both his roles), and 400 unnamed John Does. The complaint alleged breach of implied contract, restraint of trade, unfair trade practices and unfair competition, as well as detrimental reliance, intentional interference with a contract and with prospective contractual advantage and trade libel. It requested declatory relief, injunction, damages and treble damages against the defendants.

Meanwhile, on March 3, most of the alternative registries banded together at an Atlanta organizational meeting to create the Enhanced DNS (eDNS) specification. This was an attempt to standardize their sundry proprietary DNS database extensions and to create a mechanism for the establishment of an alternative global DNS root nameservice.

Then, on March 20, PG Media, doing business as *name.space*, filed suit against NSI in the Southern New York U.S. District Court, naming IANA, ISOC, the IAHC and Jon Postel as coconspirators (but not including them as defendants). PG alleged multiple violations of the Sherman Antitrust Act, as well as violations of New York State's Donnelly Act and sought an injunction requiring NSI to amend the root configuration file to include the name.space domains, damages of not less than **$1,000,000**, triple damages and costs.

SCORING AT HOME

As of this writing, the IAHC members are still hard at work, generating the relevant MOUs to accompany their *Final Report*. If all the relevant stakeholders sign those MOUs, a call for registrar applicants will go out seven days after the final signature. The application period for aspiring registrars will last another 60 days, to be followed by a 30-day evaluation period, during which the candidates will be audited and investigated to determine their eligibility. At the end of the evaluation period, a lottery will be held for all contested regions and the results will be announced the following day. Assuming that all the winners can meet that early, they will all sign the CORE MOU one day later and the IAHC will mutate into the POC the day after that.

Some indeterminable time later, the members of CORE will have solved the problem of sharing the central registry database in a secure, robust implemen-

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tation and the new domains will open up to public registration.

What will happen to .COM, .EDU and the other, familiar TLDs after NSI's contract expires in September, 1998, is still very much an open question.

In the meantime, neither IODesign's nor PG Media's request for preliminary injunctive relief has been granted as of April 2. Both trials are liable to be a long while in coming, assuming that the plaintiffs pursue their suits.

Leveraging the publicity medium of the Internet itself, the eDNS supporters have managed to attract a fair amount of attention. Unfortunately for them, even their own surveys show that, more than a year after the formation of both name.space and the AlterNIC, well less than 1 percent of the total number of nameservers across the Internet can resolve their non-standard domains. Worse still, from their perspective, neither the InterNIC root nameservers nor the nameservers of most large ISPs will resolve them, so the number of Internauts who can easily access those domains is considerably smaller than 1 percent of the Internet's population. It looks grim for the eDNS community.

Maybe that's not a bad thing. Certainly, the prospect of a fragmented root is a frightening one. Should eDNS catch on, that would be the most likely outcome, barring the highly-unlikely event of a full retreat by the IAHC and a complete surrender by NSI.

WHAT DOES IT ALL MEAN?

When the IAHC announces it will begin taking applications for new registrars, many ISPs are likely to find that they qualify, should they care to apply. Those who don't make the cut off for the initial round won't get the benefit of publicity that the first group of new registrars will enjoy, but they also won't have to deal with the technical headaches of creating and testing working shared-registry code. And there will always be later rounds for those who think that being a registrar is likely to be either a license to print money (unlikely and becoming more unlikely as more competitors join the market) or as a useful adjunct to their businesses.

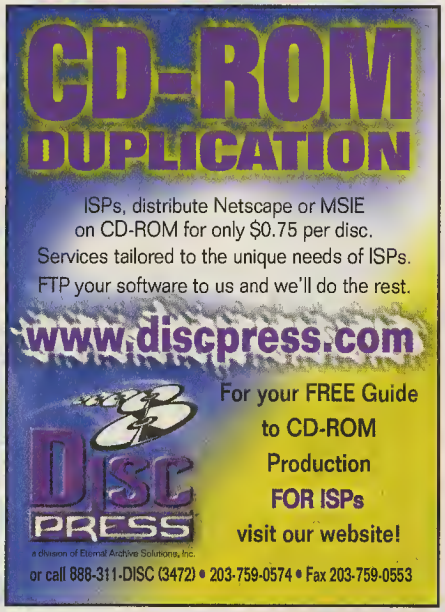
For those who plan to stay out of the market, the technical, administrative and support burden will be relatively modest. As new domains are added to the root, you'll need to download the latest BIND cache file and restart your name server. You'll have to update your user support pages to reflect the choice of registrars. You may need to re author or replace a FAQ or two. No extraordinary effort will be required.

The larger implications are the more interesting ones. Firstly, although everybody talks about LDAP (and nobody besides Novell does anything substantive about it) there is a real possibility that the expanded top-level namespace will evolve into an Internet-wide directory service over the next few years. As the number of new gTLDs expands into triple digits, there is every likelihood that it will come more and more to resemble a Yahoo!-style hierarchical directory and that those domain name holders with the appropriate affinity will voluntarily locate themselves in the most intuitively-suitable gTLD.

Secondly, the IAHC process points toward the need for the Internet community to anticipate and preempt the attempts of national, regional or local governments to impose governance structures on the Net by ourselves creating those structures in advance of need. We can have jurisdiction forced on us, or we can establish it for ourselves and thereby make it responsive to our needs, rather than those of technology-impaired politicians and jurists.

To name a thing is to gain power over it.

Ask any demonologist. ◆



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Notes From The Underground

by Wallace Wang

HELP WANTED: Information Warriors

When individuals probe the flaws in a computer system, the media calls them "hackers," a term that has an almost implicit, less-than-human derogatory tone. However, when well-financed government organizations poke around the security of a computer, the media calls them "information warriors."

Although the two terms are practically equivalent, today's world seems more impressed by multi-syllable titles. Given the choice between being called a "hacker" or a sexier "information warrior," guess which ones can make more money with their skills?

So if you want to use your computer skills for something that your government can exploit, stay out of crime and learn how you can become an information warrior instead.

As your first stop towards becoming an information warrior, visit `www.infowar.com`, a web site created by Winn Schwartau, the author of *Information Warfare*. This web site provides the latest news, links, and unclassified papers about government and military research into computer hacking, espionage, and terrorism.

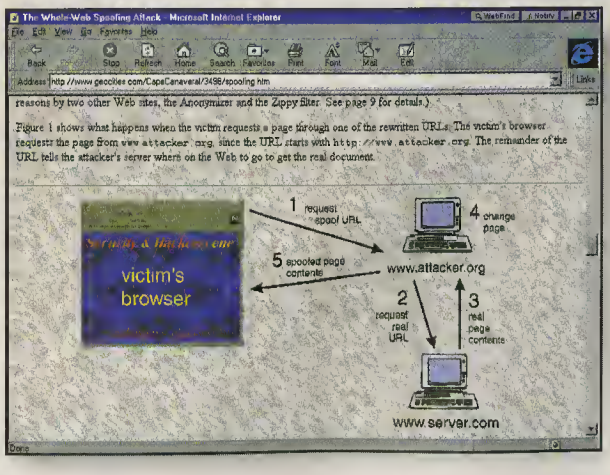
For those looking to transfer their computer hacking skills into cold hard cash, this web site also lists job openings with titles such as *Information Warfare Specialist* or *Senior Information Technician*. If you don't see a job opening you like, perhaps you might prefer some light reading by subscribing to the *Journal of IWAR Intelligence Acquisition*. This journal provides even more articles about government-sponsored research into the whole area of information warfare.





Once you're done browsing through Winn Schwartau's web site, jump over to the Security and Hackerscene web site at `www.geocities.com/CapeCanaveral/3498/security.htm`. Here you'll find a collection of text files that explains how hackers perform such tricks as web spoofing.

Web spoofing simply tricks a users into thinking they're connected to a particular web site when they're really connected to a different web site altogether. Mimicking another web site (such as a web site that supports online ordering) can trick people into typing credit card data, thinking they're connected to a "secure" web site. Those who type information into a phony web site may never realize they've been victimized until weeks or even months later.



According to this web spoofing article, the best defense against web spoofing are the following:

Wallace Wang is the author of ***CompuServe For Dummies***, ***Visual Basic For Dummies***, ***More Visual Basic For Dummies***, ***Microsoft Office 97 For Dummies***, and ***More Microsoft Office 97 For Dummies***.

When not working with computers, he performs stand-up comedy and has appeared on A&E's *Evening at the Improv* TV comedy show. He can be reached via e-mail at `70334.3672@compuserve.com`, `bothekat@aol.com`, `bo_the_cat@msn.com`, or `bothecat@prodigy.net`

1. **Disable JavaScript in your browser so the attacker will be unable to hide the evidence of the attack.**

2. **Make sure your browser's location line is always visible.**

3. **Pay attention to the URLs displayed on your browser's location line, making sure they always point to the server you think you're connected to.**

Furthermore, the web spoofing paper suggests that JavaScript, ActiveX, and Java actually make spoofing easier, so you should disable them in your browser. (There goes all that marketing promising that JavaScript can be used as a universal, safe cross-platform language.)

Additional text files on this web site explain how to grab root access on a UNIX system, how to determine if your computer system has already been invaded, and how hackers can mask their presence within UNIX. If you've ever deluded yourself into thinking you know all the security gaps in your computer's system, the wealth of articles provided here can change your mind in a hurry.

In case you'd prefer to read a printed magazine rather than a text file, visit the *InfoSecurity News* web site at `www.infosecnews.com`. This magazine contains articles, news, and links dealing with computer security, viruses, and system flaws. Best of all, subscriptions are free to qualified individuals (so just lie about your qualifications, just like most people do on their resumes).

Although English tends to dominate the Internet, French-speaking information warriors might be pleased to know about the *Information Warfare* magazine at **http://web.1-888.com/iwmag**. Naturally all the articles are in French, but it can be refreshing to read about information warfare while sharpening your French at the same time.

For another web site that focuses on information warfare, drop by the Information Warfare Research Center at `www.terrorism.com/infowar/index.html`. Besides providing additional papers and links, this web site also offers two forums for exchanging messages with others: the Terrorism forum and the Information Warfare forum. Since everyone knows that the best way to get a job is by knowing the right people, start making your contacts here and toss in your own ideas about what we should do about information terrorism and computer attacks.

While governments like to scare the public with tall tales about well-organized hacker groups feverishly glued to their keyboards to cause a nationwide disaster, the reality is that most hackers are individuals who band together more out of friendship than for any sinister conspiracy against any world government.

However, any tool can be used by terrorists, so drop by the `www.globalterrorism.com` web site and learn about well-organized terrorist groups that could turn to hacker techniques for their own means in the future. Although terrorism is a definite threat, don't forget that many so-called terrorists are fighting against governments that may consist of corrupt, criminals masking as politicians.

For a final stop in your crash course about information warfare, visit the Global Technology Research's web site at `www.aracnet.com/~gtr/archive`. Here you can learn about the latest books and magazine articles published concerning computer security and information warfare such as legal implications of industrial espionage and concerns raised by computer scientists about the trustworthiness of Java.

Naturally, these aren't the only web sites you can visit to further your education about information warfare. Just visit your favorite search engine and look for the strings "information warfare," "hacker," "terrorism," or "AOHELL" and you'll be rewarded with plenty of links related to computer security.

But you better hurry. Get your information warrior credentials soon before all the good jobs in the government get taken. After all, you may not want to sell out your computer skills to organized crime or drug dealers just to feed your family. If you want to help criminals get rich, learn to launder money by getting a job in the banking industry instead. ◆

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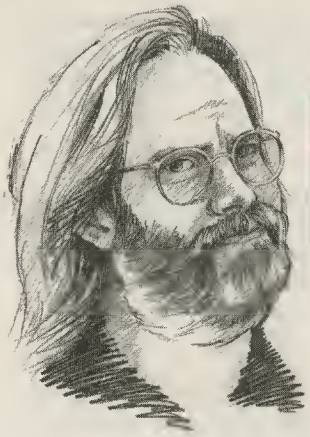
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Java Jitters

by Doug Shaker

CHECKING OUT THE JAVA 1.1 FEATURES

I have decided to give coding a rest for this month. The design that I came up with two months ago seems, to me, to be over-factored and I need to rethink it before I do any more coding. If you don't know the term, a design is *over-factored* when you have it broken into too many little objects. A sign of over-factoring is when none of the objects seem to do much except pass the arguments off to other objects. An over-factored design looks neat, on paper, but it feels stupid when you are coding since so many of the objects seem like hollow ghosts. Luckily, there is some attractive stupidity that I can comment on instead.

Doug Shaker is a freelance technical writer in California. He has one wife, two children, three pets, and five computers. The computers are obviously out of hand. He can be reached via e-mail at **mailto: doug@theshakers.org**. Yes, that is a personal Internet domain. We told you the computers were getting out of hand.

The particular stupidity that I am thinking of are the articles in computer magazines with names like "ActiveX vs. CORBA: Which One is For You?" Some are Java vs. CORBA, some are Java vs. ActiveX. I thought I even saw one that contrasted the Web and CORBA.

What I find bizarre about all of these articles is that the technologies that they compare are only minimally comparable. For example, let's take the comparison of ActiveX and CORBA. CORBA is a distributed object technology that allows objects implemented in nearly any arbitrary language on nearly any machine to send messages through something called an *Object Request Broker* (ORB) to objects, not necessarily written in the same language, on any other machine which is registered with the same ORB. It is nifty, complex technology. On the other hand, ActiveX is Microsoft's beefy DLL technology – good honest technology that made Windows programs *much* better and *much much* smaller – but it isn't a real distributed object technology. It's more like dynamic library technology dressed in distributed-object drag.

Don't get me wrong, the DLL technology is nifty. And it was nice of Microsoft to stretch it so that it works with C++ objects. And it was nice of them to stretch it so that you can download the DLLs over the Web and start them up. But it is *not* a credible replacement for CORBA technology. Yes, it does *some* of the same things as CORBA, but, Lordy, similarity on one dimension doesn't mean identity. My cat and Shamu the killer whale both eat fish—that doesn't mean Shamu has fleas, a litter box and a little collar with a bell on it. ActiveX is no more real distributed object technology than my cat is Shamu the killer whale.

Java has also been contrasted with CORBA and ActiveX. Java is a computer language. It is not a distributed object system (CORBA) and it is not a dynamic shared code technology (ActiveX). Yes, with Java version 1.1, you get a new feature, Remote Method Invocation (RMI). RMI lets a Java application call methods in other Java processes on the same or on other machines. This gives Java applications some capability to be used to implement a very lightweight distributed object system. But they can't call other languages, they don't have any sort of real security or user authentication, they won't have lots of stuff that you need for a real distributed object system. Java 1.1 is not even close to a full distributed object system—just look at the OMG white papers (`www.omg.org/library/library.html`) if you want to see what an industrial strength distributed object system is. Sheesh. Why don't we have articles comparing Ferraris and apples – they're both red.

Now that I've vented, let's talk more about Java 1.1. As I write (late March 1997), Java 1.1 has been released by Sun and has percolated far enough through the software food chain that some of the Java compiler vendors have early beta versions based on it. The release from Sun is the same old minimalist (a.k.a. UNIX-think) command line compiler that will do everything in theory and is too much of a pain-in-the-butt for any but the hard core to really use. If you want to look at it, take a look at Sun's Javasoft download page—`www.javasoft.com/products/jdk/1.1/index.html`.

I plan on waiting for the integrated development environments (IDEs) to catch up, though. Sun's Java Workshop is sure to be at Java 1.1 soon – if it isn't there already. If you are using Symantec's Café, as I am, a beta update is available to bring the Café software up to Java 1.1. By the time you read this magazine, it may be in final release. To get a hold of the beta, go to **ftp://itools.symantec.com/pub/windows/cafe/jdk11** and look around. If you use Café, write this URL down in your Café manual – even if you don't want the beta. Finding the FTP URL is reasonably hard – I knew it existed and it took me half an hour before I found its URL referenced in a Symantec support person's signature file in a private newsgroup on Café that Symantec maintains – but maybe I was just being dense. It has happened before – just ask my family.

Java 1.1 represents an important improvement to Java 1.0. Sun has added a number of important new features. It left us with one major problem, though. Java 1.1 applets will not run on a Java 1.0 virtual machine. This means that Java 1.1 applets will not run with any of the old web browsers that are already installed in that huge web universe. Netscape Navigator 3.0 won't run Java 1.1 applets and neither will Microsoft Internet Explorer 3.0. My guess is that Netscape and Microsoft will have Java 1.1 compatible browsers by mid-summer, but it will probably be the end of 1997 before most users

will have them on their machines and in use. This is a shame, because Java 1.1 has lots of nifty features in it. However, you can use the new features immediately in applications (not applets). Let's look at the new features.

First off, Java 1.1 adds an interface to ODBC databases called *JDBC*. This is a vast relief, as far as I am concerned. Without it, I would have had to munge some sort of direct interface to my database or to the C-based ODBC DLL. Java 1.0 allows you to create a direct interface to C functions, but I am not sure if it works with DLLs or whether you need C source to do it. If you do need C source, I suppose I could have created a C file that did nothing more than pass the arguments through to the DLL. Messy and ugly, but it would have worked. In any case, with or without the C source, interfacing to the ODBC DLL would have involved a certain amount of fooling around that I would just as soon not do. I am just a dumb cluck who wants to put something in a database and get it back out. The JDBC interface should make that easier.

Java 1.1 also includes some new number classes called *BigInteger* and *BigDecimal*. BigIntegers are arbitrary-precision integers and BigDecimals are arbitrary precision floating point numbers. BigIntegers are needed, or at least are useful, for monetary calculations. If you ever need to calculate the global value of the world economy in a hyper-inflated currency – and some people have to do that – you need to have access to very large integers. BigDecimals are equally necessary for scientific calculation. I used to do statistical calculations about the coincidence of very low frequency events and the numbers got very, very small – on the order of 10^{-1000}. Calculating those numbers without system support is a big pain in the patoot.

As I mentioned before, Java 1.1 also includes Remote Method Invocation. The documentation says: "A Java program can make a call on a remote object once it obtains a reference to the remote object, either by looking up the remote object in the bootstrap naming service provided by RMI or by receiving the reference as an argument or a return value." I am not sure how this translates to the real world, but I suspect it is a lot like matchmaking in the 1700s. You weren't supposed to talk to someone until properly introduced, but there were professional introduction services – matchmakers — that you could use if there wasn't anyone you knew who knew the person (or Java program) you wanted to meet. I am sure it works fine if you brush your teeth and don't eat too much garlic.

RMI is an important thing for Java as a real application language, though it's a little tough to explain why. Let me try. Software complexity is the thing that is driving us to object-oriented programming. Any bozo can write a loan amortization program in any sequential computer language available. Some fairly competent bozos can write loan amortization programs with a GUI interface in a sequential language. A few very competent people can use a sequential language to write a complex design system with a multi-faceted and flexible drag-and-drop user interface that can use multiple databases and output multiple printing systems. After that, if you want a more complex system, you need an object system or a genius programmer to keep things straight. There aren't many genius programmers and software keeps getting more complex, so the industry as a whole *has* to move to OO programming languages.

What has this to do with RMI? Well, the mainframes are dying. They do valuable work centralizing data resources for large corporations, but no one is spending much money on their development any more. They are getting more and more expensive and they will need to be replaced. But what can you replace them with? No, not an NT server. Not even a DEC Alpha server. They don't have enough cycles, and they don't have enough connections. A mainframe replacement needs to handle hundreds and thousands of connections and terabytes of data. The only alternative to the dying mainframes is a *network* of workstations (NT or UNIX, it doesn't matter) with a distributed object technology providing the unifying force across the net. Distributed objects on workstation farms are the mainframe replacement. RMI is the foot in the door that starts Java on the road to a real distributed object technology. That's why RMI is important for Java.

I'll get off the soapbox now. Besides, not all of the implications of RMI are peachy keen. For example, most of us Internet geeks have a lot of intellectual capital tied up in the idea that PGP-style encryption is more or less unbreakable. Well, PGP-style encryption is based on the principle that it is difficult to determine whether or not very large numbers are prime numbers or not. And, yes, it *is* computationally difficult to determine that. However, our notion of computationally difficult supposes that no one except maybe the CIA or NSA can get together a few hundred workstations to work on breaking a code. With RMI, any knowledgeable geek can put a distributed code-breaker applet on his web page and parcel out the computation to a few hundred thousand PCs – the owners of which may or may not know what their machines are being used for. When this starts to happen, we will have to rethink what sufficiently strong encryption means.

Getting back to Java 1.1, the specification also includes object serialization. Object serialization lets you take any arbitrary group of Java objects and convert them into a serial data stream and then back from the serial stream into objects again. This means that you can work with a set of objects, then dump them onto the disk as a text file, then later on, load them off the disk by reading the serial data back in. You can also put together a set of objects and flow them through a network socket to another Java application, and that application can reconstruct the same objects inside it. This means that you could, for example, have one application that read data from an expensive source – e.g., sports scores from a news service, a stock market feed, or a connection to a scientific instrument – and then broadcast that over the Internet to other Java programs. Lightweight object persistence and push network technology — neat, eh?

There is more stuff in Java 1.1, but I just want to mention one more thing – Java Beans. Java Beans is a standard for embedding meta-information in Java classes. Meta-information is information about the class itself, not about the thing which the class is modeling. For example, if you have a Patient class, instance variables which describe the name and address of the real patient are plain, old, regular data. On the other hand, a variable which indicated that you could set the Name variable of the Patient class using the setName method, that information is about the class itself and is meta-data. Java Beans specifies a standard for meta-data that will allow IDEs to look at a class and understand how it is to be used. This enables non-vendor-specific visual programming environments and non-vendor specific visual programming components. This is good. It also means that sorely needed enhancements to the Java Abstract Window Toolkit should be usable by any interface building utility. This is very, very good.

With any luck, your chosen Java vendor has sent e-mail asking if you want to get a Java 1.1 upgrade. Make sure you can't download the upgrade for free from their FTP site, then say "yes."◆



PUBLISHING ON THE WEB

by Michael Erwin

STARTING TO PUT IT ALL TOGETHER — FINALLY

This month I am going to start wrapping up our discussion of building an online ordering system. Over the past few months, I have shown you how to build great HTML pages, build animated GIFs, and pass data to and from various database systems using several different methods. I have also illustrated how you can use HTML forms and how to perform various CGI functions such as server pulls and pushes.

Over the past few years, the same type of questions pop up when we get to this phase? One that I can never answer, is: "Do you think (insert any item here) there is a demand for, and how much should I sell for?" So, I don't even bother any more.

However there are a couple of things that we haven't talked about, which we definitely need to discuss before going much further. For example, what products are you going to be selling? What look are you going for on the site? Will the site appeal to or appall prospective buyers?

Are you going to build a fully automated online ordering system if you haven't a thing to sell? I don't think so. Then, you will need something to sell to the increasing mass of people in the online community.

The cool thing about doing business on the Web is that you don't need a single item in stock. For example, look at the online bookstores. They do something called *JIT*, or *Just In Time*. That is, they do not carry an inventory. Why not? Well think of it this way: When they have an inventory, they tie up a fairly large amount of money in something, that may or may not sell. Building a web site is dirt cheap compared to the cost of maintaining an inventory for even a small product list.

Successful companies queue each order up with a bunch of other orders when you order from their web sites. Then they call to order everything from their suppliers. Online book stores, for example, order from publishing companies. Since they do mass orders of what is already sold, they get better discounts than conventional book stores—as much as 50 percent. When they receive the product from the publishers, they turn around and process your orders. Just in time with a twist. Selling you the product for a lower cost due to not having to carry an expensive inventory.

What does this mean for all of you looking to make a living via the Web? Can you imagine what can happen if you so desire? You can start a company with very little capital, and compete with the likes of Sears, B. Dalton, Gateway, or even WalMart! Now at this point you might be thinking, "Yeah, but everyone can do it!" Yeah, and your point is what?

But here is where you have an edge. Remember back a few months ago, when Ric Manning wrote about web shopping. He told you the big secret about building a productive online catalog ordering system. You must have product depth and breadth in your online catalog. That is, you must sell more than just a few items and each of those items needs to have several variations such as color or size. Pick a niche or broad market area. An example might be an online wine enthusiast catalog, selling everything you can imagine dealing with wine and other fine adult beverages.

As a matter of fact, I would spend my hard-earned money at an online road warrior store. It would be one place where I could get everything from a Hartman leather flap-over briefcase, to a new drag-behind suitcase. I am not just talking about a few products to choose from, but one place to view every manufacturer that makes products useful for road warriors. Talk about potential for someone making a killing. As a matter of fact, you know how for years we have griped about most computers being gawd-awful shades of beige? Well, try to purchase luggage in some other color than laptop-carrying-case black. It's not that easy. Sorry, I digress.

So, what are you actually selling? Convenience so I don't have to drive around trying to find these things when I actually get a day off. Convenience so I don't go searching all over the Net to find a new briefcase, only to get ticked-off when I still need to call the 800 number to actually order it. This, for the lack of a better word, stinks.

You know that many companies have figured out by now, that it is no big deal to produce a web version of a paper catalog. But it seems that they are totally clueless, either mentally or technically, on this new paradigm of a business model.

So you need something to sell, actually a bunch of different items to sell. Remember "breadth and depth," that is the big secret.

Okay, let's say you have a bunch of different items to sell, so let's start building our site.

One thing you will need is snazzy, but efficient graphics. Remember, people are going to be sending you

Michael lives in Huntington, West Virginia, with his wife Jacqueline and Paxi Baby (Jackie's Shar-Pei dog). He has designed, built and administered network systems for over 16 years. Mike has organized and documented his 600-megabyte bag of tricks, tools and voodoo on a CD-ROM entitled, *The WebMaster's Resource*. It is available for US**$24.95**, plus US**$2.00** shipping in the United States or US**$5.00** elsewhere; send check or money order to 320 36th Street, Huntington, WV 25702-1632. Please allow 4-6 weeks for delivery. For more information **mailto:** `mikee@eve.net`

money for your products. Your site needs to be fast and responsive, and look professional. I am always preaching this.

Make sure the graphics you use are professional. Take a few moments and look around the Web at a few professional sites. Like `www.landsend.com`, `www.ge.com`, `www.ford.com` and `www.ibm.com`. I am not saying that these sites are great catalogs; however, you can learn from these companies spending millions developing their sites.

Notice that the attractive ones use simple, professional graphics, not just a bunch of pictures scanned in at 16.7 million colors. Keep in mind that many accessing the site will be using modem connections of two speeds: slow and slower. Simply scanning a paper catalog into a web compatible graphic format normally produces lack-luster quality and huge byte counts. Yeah you might quickly get a lot of big images on the Web, but people will visit it once and never return. Not a good thing.

I like many of the HTML extension products, as long as the extension happens on the web server. You don't want to force your visitors to download the latest, greatest and utterly useless plug-in for their browsers. Remember, you may not be marketing to just us techie types. To really be successful, you will need to reach what Jack calls the "Mommy Factor," that is those who don't download the latest Shockwave viewer each week. We need the great unwashed of the Net to accept our online catalogs and order our products if we are to make a fortune.

For simplicity sake, we need to develop the method of handling orders. For example, do we want to have the client fill out a blank order form? To make it simple and easy to use, we need the online system to display the options available for each product, keep a running order, and keep track of customer information.

I personally like to fill out my customer profile once. Why should I have to keep telling the same site where I want to ship everything. So, we can use persistent state cookies to handle that information. For the system to keep track of the entire order, we can use hidden HTML inputs. Since we keep track of the customer's address, we can calculate shipping charges and taxes, if needed.

Personally I like to build my shopping list, then be able to review the items, quantity, and cost before the order is finalized and processed. Then I also want to e-mail a follow-up letter, recapping the order.

Then we need to get an itemized list of all orders so we can order them from the appropriate manufacturers or distributors. We also need to integrate all of the orders and purchasing with a real industrial canned accounting package. With all of the available systems, there is no need to write the accounting package. So choose one that will be able to talk with your database system.

At this point we can start down the long road of laying out our site and its interface. Take all the time you need to do this. Spend some time thinking it through. Remember the nature of this site means that it is always going to be changing. Build a couple of sample catalog pages. Experiment with several different formats. Get opinions from others about the sample pages. Do your market research.

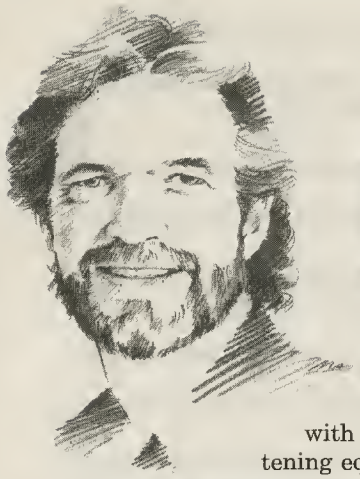
That about wraps it up for this month, but you have a bunch of homework to do before we continue.

- **What are you going to sell?**
- **What customer information do you want to keep?**
- **Are you going to use cookies?**
- **Do you need to collect taxes?**
- **Look for ideas on other professional web sites.**
- **Choose your database system.**
- **Choose an accounting system.**
- **Build at least three radically different examples of the same page using different styles and formats.**
- **Try various graphics layouts. Ask others for their thoughts about the example pages.**

Next month we will look at one more item for the online ordering system—how to handle credit card orders and what is needed for credit card processing. We'll look at some options.

Until then...◆





MANNING THE WIRES

by Rick Manning

MODEM AND KEYBOARD HELP DIGITAL SLEUTHS

Eric Feller is a private investigator, but he doesn't own a gun, a camera with a telephoto lens or any sophisticated listening equipment. The tools of his trade are the computer, modem, printer and fax machine that occupy a corner of his apartment.

Feller is among a growing number of investigators who do their work at a computer keyboard. Instead of an office in a downtown building, Feller has a web page on the Internet at `www.iglou.com/iirs investigate`. "We do all the things that a private investigator does except surveillance," he said.

Feller finds what his clients want to know by searching the fast-growing world of electronic databases — online information warehouses that are stocked with a surprising amount of personal information about me and you.

Names and phone numbers are easy. So is your Social Security number. How about your resume? Is everything totally accurate? Feller can verify all those schools and degrees that you listed. And he said 30 percent of job applicants lie about their background.

Trying to rent a house? Feller can find out if you've ever been evicted. He can also look up whether you've ever declared bankruptcy or if there are any liens or judgments against you.

While he's at it, he'll see if you're wanted by the FBI.

Do you owe money to someone? Feller said he can get to motor vehicle records in 30 states to see if you're driving a old Datsun or a new BMW. He can also see if you own real estate in some of the larger states, including California and New York.

Feller said most of his clients are companies and landlords who want to check the background of prospective employees and renters. Many come from the Louisville, Kentucky area where Feller lives, but a surprising number call Feller from other states after finding his site on the Web.

"One person asked if we do investigations in Japan," he said.

Not all clients are interested in business. Feller said he also tracks down people for school and family reunions. One man asked Feller to find an old girlfriend whom he hadn't seen in 36 years.

"After they got together, she called me up and she was in tears. She said she was so happy to see this guy, that she had wondered for years what had happened to him," he said.

Feller said he has also used databases to help adoptees find their birth parents or to collect information in custody disputes.



Eric Feller
private investigator

Photo by Rick Manning

Ric Manning writes about business technology, computers and consumer electronics for ***The Courier-Journal*** in Louisville, Ky. His weekly column called *Home Tech* is distributed to more than 80 newspapers by the Gannett News Service and it's available on the World Wide Web **http://iglou.com/gizweb**

Ric was the founding editor of ***Plumb*** and ***Bulletin Board Systems***, two newsletters that covered the BBS arena in the early 1980s. His freelance work has appeared in several magazines including ***PC/Computing***, ***Mobile Office***, ***PC Week*** and ***Home Office Computing***. Ric lives in Southern Indiana with his wife, two children and a champion Weimaraner. Write to Ric at `ricman@iglou.com`



Although Feller uses the Internet in his searches, he said about 98 percent of the information that feeds his business isn't on the Net. "You often hear people say that you can find driving records and credit information on the Internet. That's just not true," Feller said.

Most of the good stuff comes from commercial databases that charge a fee, often a steep one, for access to the data.

Feller said many of the database companies he uses have tightened their access rules following last year's flap over the P-Trak service from Lexis-Nexis. The database publisher offered a new locator service that displayed a person's the name, Social Security number, birth date, current and former addresses, telephone number, and maiden name of almost anyone who ever applied for credit.

The service touched off a storm of protest on the Internet. Some Usenet postings and widely-circulated e-mail letters claimed erroneously that P-Trak allowed access to an individual's credit history and mother's maiden name.

Lexis-Nexis eventually stopped providing Social Security numbers and promised to remove anyone who asks from the database.

When Feller does use the Web, he has a couple of favorite starting points. One is Database America (`www.databaseamerica.com`), which offers free business profiles and searches of telephone directories. It will even do a free reverse search: you type in the phone number and it will tell you who the number belongs to.

Another place Feller likes to check is DejaNews (`www.dejanews.com`), the indexed collection of Usenet postings. Feller said DejaNews is a good place to find out what people are saying — or posting — about a company or an individual.

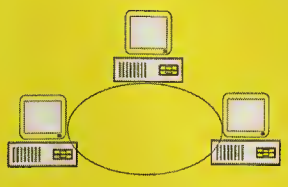
Other online investigators say they have combed the Usenet postings to find people, such as wayward husbands posting notes in the *alt.singles* sections.

Here are some examples of what online investigators can find:

ONLINE INVESTIGATIONS

- Bankruptcies liens and court judgments
- Real property ownership
- Aircraft ownership
- Credit card activity
- Bank account information
- Social Security number verification
- A private phone number from a name and address
- An owner's name from a cellular phone number
- Owner information from a pager number
- Sex offenders registered in Indiana or Florida
- Ownership of a post office box
- Residential neighbors
- An address from private phone number
- A list of residents at an address
- A name and address from a Social Security number
- Verification of a professional license
- Federal Prison inmates
- Driving history
- Verification of a drivers license

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BIG BOARD BRIEFS by Wallace Wang

AMERICA ONLINE LEASES 50,000 MODEMS

In a desperate attempt to keep subscribers from defecting and polish its already tarnished image, America Online has leased 50,000 additional modems at a cost of **$15 million**. America Online estimates that the extra modems will increase the system's capacity by almost 60 percent.

Peter Krasilovsky, an analyst at Arlen Communications, claims that the leased modems will cost America Online a dollar an hour for AOL members to get through, compared with AOL's own modems which cost the company about 25 cents an hour.

So will these extra modems help relieve America Online's congestion? Give them a call on a Friday evening and find out for yourself. Or better yet, just get yourself a separate Internet account with another Internet service provider and you won't have to worry about it at all.

THE MICROSOFT NETWORK REVAMPS PROGRAM LINEUP

Still searching for a clue on how to run an online service, Microsoft has canceled nearly half of the 20 "shows" it launched on the Microsoft Network four months ago. After the original Microsoft Network got buried by the popularity of the Internet, Microsoft overhauled the online service to mimic television networks. This brilliant move essentially created a hard-to-use online service with all the appeal of a bad public access cable channel.

After "canceling" these "shows" that most people never really cared about anyway (including many of Microsoft's own employees), Larry Cohen, group product manager for the Microsoft Network, said Microsoft will lay off nearly 200 contract workers although no permanent employees (such as Bill Gates) will be affected.

Bob Bejan, who heads content development for MSN, says that the canceled shows will be replaced by 14 new ones that nobody will likely care about either. Given the Microsoft Network's slow and clumsy user interface and its total irrelevance to the Internet, expect to see yet another major "directional" change for the Microsoft Network in another year or so. If we're lucky, maybe the Microsoft Network will even disappear completely.

AUTOMATED AMERICA ONLINE ACCESS

With both Microsoft and Netscape redesigning their browsers to receive Internet broadcasts, America Online has jumped on the "push" bandwagon and plans to incorporate similar technology into the latest incarnation of its software, scheduled for July release.

The new feature, called *AOL Driveway*, will be packaged with the version 4.0 of America Online's software. To prevent further congestion on America Online's phone lines, AOL Driveway is preset to dial in to America Online during off-peak hours. America Online estimates that by using AOL Driveway, members can access their favorite America Online forums in sessions lasting approximately 15 minutes or less.

America Online hopes that AOL Driveway will not only reduce usage on its phone networks but also provide a new source of revenue as well. If you use AOL Driveway, don't be surprised to find advertisements popping up on your screen. America Online plans to sell advertising space since it's already losing money with its **$19.95** unlimited pricing plan.

PRODIGY LAUNCHES A BUSINESS REFERENCE CENTER

Thinking about starting a new business (perhaps as a local ISP)? As part of your research, visit Prodigy's new Business Reference Center, a collection of searchable databases that includes major U.S. Newspapers, world patents, credit reports, trademarks, accounting and tax information, and other information that is specifically designed for small business owners, home business operators, and entrepreneurs.

The Business Reference Center is organized under seven major research groups: Business & Company Information; Copyrights, Patents & Trademarks; Medicine; News; People & Biographies; Science & Technology; and Social Science, Government & Education. Each major category then leads to simple point-and-click hierarchical sub-categories in which users can quickly locate information through keyword searches.

Since nothing is free, Prodigy's Business Reference Center is offered as an extra-fee service, with searches priced at **50 cents each**, and full text and document retrieval prices ranging from **$2 - $85**. You can visit Prodigy's Business Reference Center at `www.prodigy.n2k.com`.

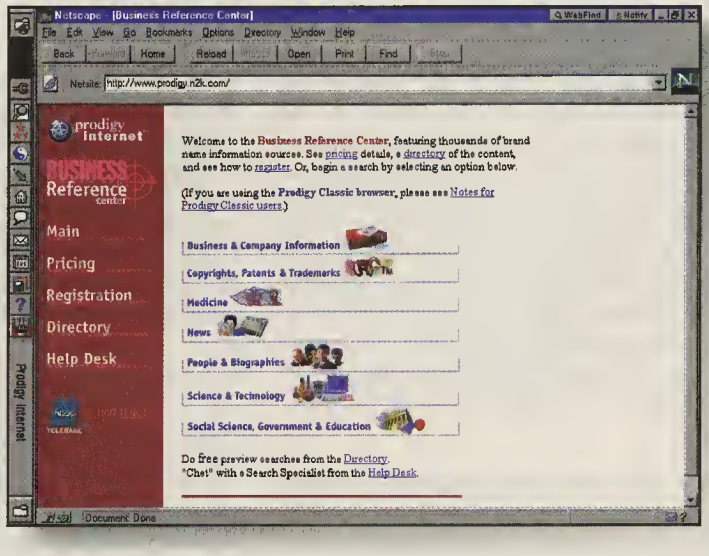
Wallace Wang is the author of ***CompuServe For Dummies, Visual Basic For Dummies, More Visual Basic For Dummies, Microsoft Office 97 For Dummies,*** and ***More Microsoft Office 97 For Dummies.***

When not working with computers, he performs stand-up comedy and has appeared on A&E's *Evening at the Improv* TV comedy show. He can be reached via e-mail at `70334.3672@compuserve.com`, `bothekat@aol.com`, `bo_the_cat@msn.com`, or `bothecat@prodigy.net`

Perhaps with the information you find here, you can get all the information you need to start your own business and work for yourself for a change.

DELPHI ANNOUNCES FLAT-FEE PRICING PROGRAM

Unlike CompuServe or the slowly-dying GEnie online services, Delphi has announced an unlimited pricing plan of its own. If you're willing to pay in advance up to a year, you can access Delphi for as low as **$16.95** per month. If you want to pay in six month increments, the monthly rate rises to **$19.95** per month. If you just want to pay month-by-month, the rate further increases to **$23.95**. In case you want to access Delphi and the Internet, join Delphi's "Value Access Plan," which gives you up to 6 hours a month for a monthly fee of **$12.95** with additional hours priced at **$2 each**.



If you absolutely can't live without the content provided by Delphi, this new pricing plan should warm your heart. For the rest of us who can't figure out why anyone would want to pay extra to access Delphi and the Internet, this pricing plan still falls short of the typical **$19.95** flat-fee that everyone else is charging. Delphi may be changing with the times, but until it starts to lead, it will likely remain further behind as a viable force in the online community.

AMERICA ONLINE OFFERS LONG DISTANCE SERVICE

America Online has joined forces with Tel-Save Holdings to provide long-distance telephone service to AOL users who haven't heard enough of busy signals in their lifetime. AOL customers who sign up for Tel-Save long-distance service will be able to review their bills and statements online (provided they can connect in the first place) and order products such as calling cards. Bills will show up on their credit cards.

To help forge its place in the long-distance market, Tel-Save has reportedly paid America Online **$100 million** with AOL receiving future rights to Tel-Save stock. Tel-Save sells its long-distance service through its own network and also resells AT&T's long-distance service. America Online plans to run ads promoting the service for at least three to four months, or until enough subscribers sign up and run into busy signals once again.

COMPUSERVE'S MEMBERSHIP DROPS, CEO BAILS

In one quarter, CompuServe managed to lose **$14.2 million** while watching its membership fall to **1.65 million** in the United States alone. Nearly 140,000 members dropped out of CompuServe at the end of the quarter on January 31.

Despite falling membership along with its declining revenue, CompuServe vows that it will not succumb to the **$19.95** flat-rate fee that has caused so many headaches for America Online. Ostensibly, CompuServe claims that the **$19.95** flat-fee isn't profitable, so obviously CompuServe has found a way to make money by losing customers instead.

Given a choice between a **$19.95** flat-fee or CompuServe's expensive hourly rates, why would anyone in their right mind choose CompuServe? Even CompuServe's CEO, Robert Massey, has decided to leave CompuServe after less than two years of guiding CompuServe from the number one online service to the latest has-been in the online market.

Massey claims that he is "looking at a couple of opportunities" related to the online services market. Perhaps the only hope for CompuServe is if Robert Massey got a job as the CEO of America Online. Then he could bring that online service to its knees so CompuServe might regain its former leadership once again.

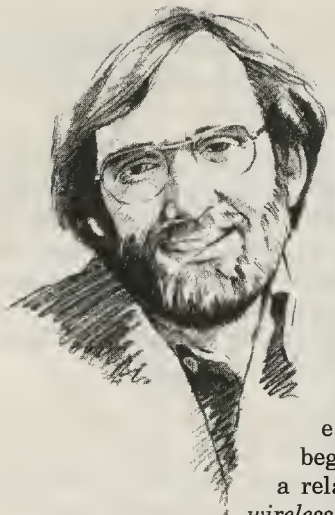
MORE ONLINE WOES

A Superior Court judge in Seattle (home of Microsoft, naturally) temporarily banned America Online from seeking new users in Washington state for 14 days, pending the outcome of a breach-of-contract suit filed by a state resident.

The plaintiff, John Cavey, is one of a growing number of individual subscribers to sue AOL, claiming they paid for services they have been unable to receive. Although America Online's customer outrage has hit all the major headlines, hardly anyone cares about the Microsoft Network's problems.

A glitch in the Microsoft Network (run on software developed by Microsoft) recently prevented its members from sending or receiving e-mail. MSN's group product manager, Larry Cohen, said Microsoft engineers discovered that the problem affected subscribers whose names started with P, Q and R, although no messages were lost. In addition, member in Phoenix, Denver and Seattle (surprise!) have reported consistent problems connecting to the service during peak usage hours between 5 p.m. and 10 p.m.

Finally, after losing millions buying (and then killing) the AT&T InterChange online service, AT&T got the bright idea to convert InterChange into an Internet business news operation dubbed the *AT&T Business Network*. After less than a year, AT&T has reversed its decision again and killed the AT&T Business Network along with its online gaming service called *ImagNation*. Now aren't you glad you never invested in anything run by AT&T? ◆



EDUCATION LINK

by Rea Andrew Redd

WIRELESS CABLE, SATELLITES, AND THE INTERNET II:

The Invisible Hand of Self Interest in the Marketplace

It was the era of big money, big Republicans and big ideas. In the early eighties, the federal government began to push colleges and universities into a relationship with a new technology called *wireless cable*. Today, some institutions use black ink for televised courses, other schools use red ink. Wireless companies got unused and surplus frequencies reserved for schools in their regions in exchange for payments in cash to the schools, which came from subscribers. Some wireless companies are cash cows, others have been lead to the slaughterhouse of bankruptcy court.

Rea Andrew Redd lives and works in southwestern Pennsylvania where he manages a high school library, teaches European history and Scholastic Achievement Test preparation. On occasion, he reenacts American Civil War battles with the Ninth Pennsylvania Reserves, an historic, military impression unit. E-mail Rea at: redd@genesis.duq.edu

This strategy was designed to jump-start the wireless cable industry and move it quickly into competition with the coaxial cable industry. In many regions, revenues flowing to schools from the wireless cable companies have not materialized. Wireless cable has about a million subscribers, coaxial has about 70 million. Now it is the digital era, new technology will multiply the broadcast capacity that colleges lease to the wireless companies. Hopefully the colleges will use the money to set up and fine tune online resources, distance learning, and implement faculty training in web use and online classes. The Federal Communications Commission (FCC) and current legislation requires educational license holders to offer programming for students and the public.

Add to the market mix the fact that an AT&T satellite used by many schools died unexpectedly several months ago. Telstar 401 went into service in early 1994. When it went down, it jilted such high profile clients as the Public Broadcast Service, the Adult Learning Service, and about ten major universities. Telstar 401 was supposed to last until 2007 but is now indefinitely out of service. Other satellites are carrying the load once carried by Telstar 401 and AT&T has sent out technicians to reposition satellite dishes and antennae. Of course, one of those "invisible hands" working in the marketplace, scarcity, is sending prices up and tilting budgets for distance learning and related activities into red ink. Companies that do have satellites available for schools now want long term leases for their satellites.

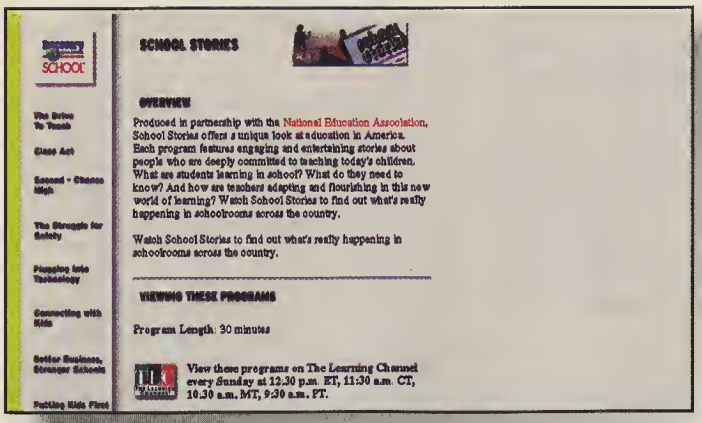
The impact of the financial straits of both wireless cable and universities, and the untimely death of Telstar 401 upon the birth and infancy of Internet II may be profound. The Very High-Speed Backbone Network Service (VBNS), managed by the National Science Foundation, is a direct competitor to Internet II and hopes to have a membership of about 200 colleges and universities. Internet II would service all online parties and has a goal to be about 100 times faster than the current Internet. The early organizers of Internet II, about 100 members, expect to ante up about **$50 million** and have it available by this summer. Congress is presently bucking up **$100 million** to get off the ground. So far, colleges and universities are reluctant to commit more than an initial **$500,000** a year for three years.

Internet II will be regionally organized and each region will have a gigabit capacity point of presence, which has been nicknamed a *gigpop*. *The Chronicle of Higher Learning* reports that, "a gigabit connection can offer speeds hundreds of times as fast as today's Internet connection. A point of presence refers to a local or nearby site at which a process is taking place, like getting information via telephone without incurring long-distance charges." With very little difference between Internet II and VBNS, the debate has turned political. The supercomputer institutions have a tendency to look at VBNS as an exclusive club while the Internet II schools see such a duplication of services as a wasteful use of limited time and funds.

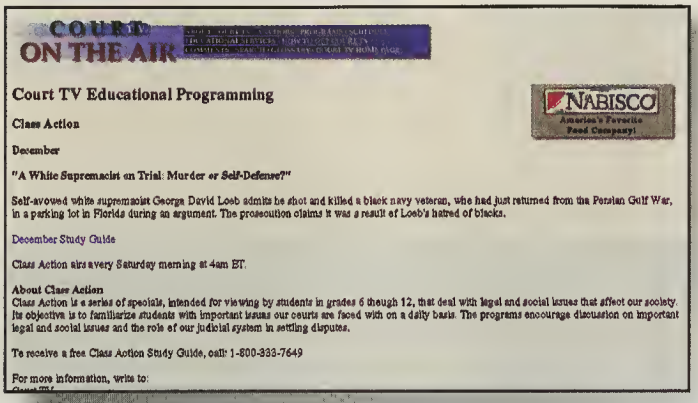
Will America Online, Microsoft or some other deep-pocketed company mediate the dispute between Internet II and VBNS? Will the wireless cable industry come of age in time to upgrade the Internet? I suspect that sometime this summer the major university contributors, both private and corporate, will twist some arms and say, "We are not going to pay for both Internet II and VBNS!" Or, will some big wireless cable satellite company enter the fray and use customer fees to bankroll Internet II, from which they can collect satellite rental fees? Whatever occurs, Internet II will become a part of the marketplace. There's a buck to be made, and the next Internet is up for sale.

I CONFESS

I teach three sections of European history at the tenth grade level to academically diverse students. Some are on Ritalin, some have health problems at home, and some are just not mature. So I make deals with the students and their parents. They are informal contracts which include two points: The student must pass all tests with a minimum of 60 percent and the student must watch TV. I select the shows they watch, videotape, and report upon. I have received video studies of the American automobile industry and Columbus' voyages of discovery, among other topics. If the program is on the Discovery Channel, I also



assign **http://school.discovery.com**. Although it is designed for teachers, I have the students investigate it. The site contains extensive support materials and curricular links which the student can also use. The student with the informal contract must give me the videotape and ten statements of the main ideas presented in each hour. If they don't have Internet access at home, they have to track down friends who do. I have the parents sign off on the work which the students present, and I send the tests home just to make sure the parents know how the students are succeeding in traditional test situations.



Well, what about students who have no other problems other than that they are on their way to careers in art and illustration, drawing their way through history class? If they draw comic illustrations, then I have them videotape sections from the Sci Fi Channel, write the main ideas, find the curriculum, and make a five minute presentation to the class. Support materials are at **www.scifi.com/sforiginals/insidesp/isclassroom**. They have to be ready on any day for an entire week that I wish to call on them. For students who would rather watch soap operas in the afternoon, their assignments are to videotape a news segment from Court TV and visit **www.courttv.com/ontheair/education.html** for the background and a description of the personalities involved.

TELEMENTORING FOR YOUNG WOMEN

The Center for Children and Technology (CCT) has plunged into the chat room scene in an enviable way. Young women with an interest in science, particularly engineering and computing, are now being organized with an eye toward career guidance and emotional support (**www.edc.org/CCT/telementoring**). With funds from the National Science Foundation, the CCT is implementing a program that creates successful telementoring experiences for females as young as the first grade. Although the CCT's efforts are focused upon high school-aged females, the CCT will find mentors for girls at any grade level if the classroom has appropriate technology.

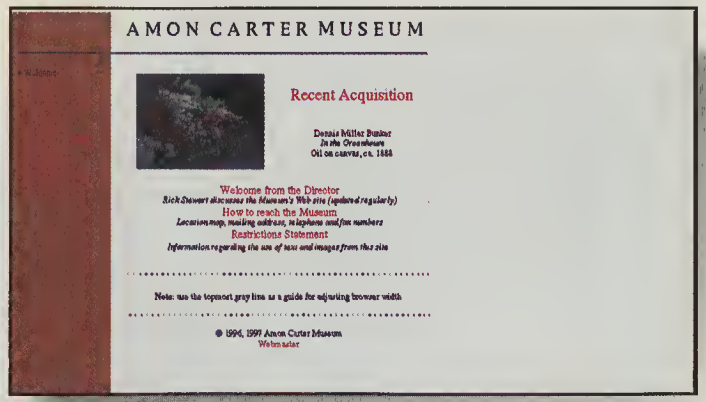
CCT does not merely hook up professionals with students, it makes sure that online conversation spaces, activities, and support are brought together to make the mentoring experience work well. Telementoring can be both a formal and informal exchange. Using e-mail and the Web, relationships can last for a week or for more than a year. CCT links students to professionals for a year-long relationship focusing on career guidance and personal development. CCT's telementoring project contacts professional associations, listservs, and corporations to seek out interested science professionals. Other projects include the University of Texas Electronic Emissary Project (**www.tapr.org/emissary**). It presents a wide range of academic fields and experts to assist K-12 classroom teams for a semester-long project. Northwestern University's Co-Vis Telementoring project (**www.nwu.edu/mentors/welcome.html**). Assists science professionals by using subject inquiry methods on science projects with high school students.

Because a degree of online support is necessary, CCT has on online training listserv to which science professionals are expected to contribute. An end to the mentoring relationship is always expected. Summary activities are encouraged and written assessments are requested. Dorothy Bennett (**dbennet@confer.cdc.org**) is the CCT project coordinator at the Education Center.

MUSEUMS, GALLERIES AND MAGAZINES



Koncepts Cultural Gallery is a multi-disciplinary arts organization whose web site accesses a virtual community of artists, musicians, and performance artists in northern California. The focus of the organization is the revitalization of the San Francisco area. Visit **www.sirius.com/~koncepts** for a gallery visit and some creative arts and initiatives. If you also enjoy American artists, visit the Amon Carter Museum and Gallery (**www.cartermuseum.org**) where you will find a private collection of paintings and sculptures by Western artists such as Frederick Remmington and Charles M. Russell.



The Computer Institute maintains a web site that focuses on the history of computing and the transformation of cultures.

The work, education, and leisure time of people are presented at this electronic museum at `www.fog.com/institute`.

THE K-12 BROWSER

Elementary and Middle School Discover

A new online version of the very popular SIRS Discover database is up and running. The interactive reference tool for elementary and middle school teachers has full text articles which can be accessed by subject tree, keyword, and subject heading. Articles are indexed according to the Library of Congress rules and have been selected from nearly 500 magazines and newspapers. Keyword searches now include phrase and natural-language searches. The SIRS Discover service is updated monthly and a 60-day preview is available at `www.sirs.com` or by calling **1-800-232-7477**.

Economics

A lively debate can always be started by asking, "What do students know least when the graduate from high school, geography or economics?" However, there are Net-based resources that will help students escape their ignorance of economics. Three high school students from Potomac, Maryland have created Edustock: Economics and Investment at **http://ananke.advanced.org:80/3088/welcome/welcome.html**. Edustock presents a history of the stock market and how it is used today. Its informal style makes it welcoming to high school students. This site allows students to invest an imaginary $100,000 in the market and follow their portfolios in real time.

EcEdWeb Economic Resources for K-12 teachers is hosted by a team of teachers at the University of Nebraska at Omaha's Center for Economic Education (**http://ecedweb.unomaha.edu**). The electronic curriculum has a K-6 component and a 7-12 component. It begins with scarcity and finishes with a presentation of profit and taxes. The K-6 component teaches more about economics, I bet, than most American high school seniors know when they graduate. The 7-12 component follows the National Council on Economic Education's curriculum which prepares students for a practical experience after high school and for introductory economics courses at the collegiate level.

THE COLLEGIATE BROWSER

History

The University of Texas at San Antonio has created a directory of women's history resources. This web site which was organized by states, archive facilities, and special collections, can be accessed at `www.utsa.edu/Library/Archives/links.htm`. Stanford University has initiated an archive of primary and secondary documents called the *Martin Luther King, Jr. Papers Project* at `www-leland.stanford.edu/group/King/`. It contains links to articles, biographical materials, a chronology, the full text of many of Dr. King's speeches, and material on the Center for Nonviolent Social Change.◆

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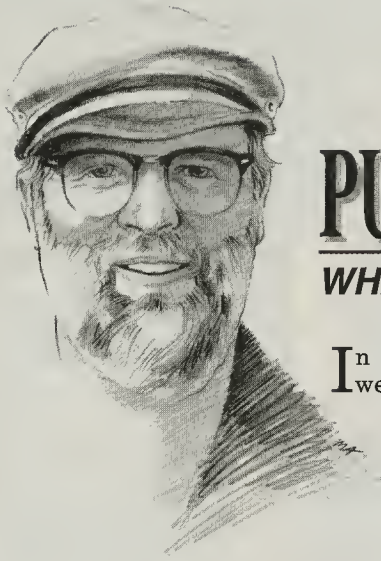
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PUTTING THE NET TO WORK

by Durant Imboden

WHAT'S BREWING ONLINE

In last month's column, I wrote about web sites devoted to spiritous beverages. My research left me amazed by the paucity of booze-related Internet resources. With alcohol being a more popular vice than drugs or tobacco, it seemed reasonable to assume that the Web would be awash in pages on scotch, whisky, bourbon, gin, vodka, brandy, and other sundry (or Suntory) distilled beverages.

This month's topic is beer. And, as fate would have it, the Internet offers far more information on beers and brewing than it does on hard liquor. I'm not sure why this is true—maybe it's because beer goes with pizza, the traditional meal of computer addicts.

MARKETING GLITZ FOR GUZZLERS

It isn't surprising that the large brewers have created web megasites. The mass-market beer industry, like the cigarette business, relies on "lifestyle marketing" to create differentiation among "parity products"—i.e., bland, light beers that are the alcoholic equivalents of soda pop.

Few brewers would confess to selling image over flavor. One company that comes close is **Molson**, (`www.molson.com`). On its "Stuff to know" page, the Canadian brewer groups its more than 40 brands by psychographic profile. Contemporary lagers, such as Carling Black Label, "are targeted toward consumers with current values and socially active lifestyles." Traditional, full-flavored beers like Molson Export "appeal to consumers with relaxed, comfortable lifestyles and traditional values," while premium beers (e.g., Molson Cream Ale) "target consumers with a balanced lifestyle and high aspirations." Flavor is mentioned, but primarily in a marketing context.



Like many other drink-related sites, Molson On-Line entices the visitor with games and other gimmicks that encourage repeat visits and brand loyalty. A highlight is the Mock Government page, where members elect a premier of each Canadian province for a six-week term. The premiers maintain web pages for their provinces until the next election—or until the web master removes them from office for improper behavior, a possibility that illustrates the dangers of a government run by technocrats.

La Brasserie McAuslan Brewing Inc. of Montreal uses a more benign game to increase traffic and beer sales. The pint-size brewery's **Macauslan Brewpage** at `www.macauslan.com` offers the chance to win a free t-shirt with its "McAuslan Caps" interactive game. Match two bottle caps within three tries, and your name goes into that month's contest hopper.

When you've finished playing the game and reading about McAuslan's assorted ales and stouts, you can visit selected "brewlinks" or get homebrewing tips from brewmaster Ellen Bounsall—a form of altruism that you won't find at **Budweiser** (`www.budweiser.com`), which prefers to woo customers with screen savers, sports pages, a merchandise catalog, "Bud Boards," concert schedules, and a chat room that was closed on my visit (apparently due to misbehavior by unruly boozers).

Heineken (`www.heineken.com`) is another big-time brewer with a large web budget. Unlike Bud, it has a collection of unmoderated chat rooms called the *Heineken Virtual Bar*, a.k.a. the *Heineken Grand Café*, where you—or, more accurately, your avatar—can offer to lick any man in the house in Dutch or English. (However, you'll need to do it in Netscape, since the bar is off limits to other browsers.)

Still, the champion corporate beer site has got to be **Guinness** (`http://guinness.com`). Besides the usual free screen saver and product information, Guinness has a great animation sequence on the Shockwave version of its "Welcome to St. James Gate" page (`www.guinness.ie/brewing/menu.html`). You can even learn something about brewing, assuming that you have patience or a high-speed Internet connection.

Click the "Brewing" icon (the bubble with the flask), then select "Interactive Brewery" for an opportunity to brew your own batch of Guinness Stout. When you've selected the various recipe options and followed the animation through the brewing process, you may discover that your "perfect pint" is a bottle of dishwater—but don't worry, because a robot brewmaster's analysis will help you avoid the same mistakes next time.

THE GLOBALIZATION OF LOCAL BREWS

When the microbrewery fad got underway in the late 1980s, the rationale was simple: Bring beer making back to its local roots, abandoning the bland mass-

Durant Imboden is a freelance writer whose credentials include published novels and nonfiction, fiction editing and staff writing for *Playboy*, travel writing for corporate clients, and representing authors at a New York literary agency. He currently manages the Writing Forum on The Microsoft Network and co-authors the "Flame Wars" column on Delphi, where he is an editorial consultant. Durant maintains a web site for writers at **http://www.writing.org**. **MailTo:** `imboden@writing.org`

market corporate beer ethic in favor of distinct and full-bodied recipes.

Today, a growing segment of the beer market is taking a "Just say no!" approach to Bud, Coors, and other purveyors of cheap canned fizz. Microbreweries, brew pubs, and regional craft breweries are no longer exotic, and you'll find new brands to try (usually at sobering prices) on each visit to your neighborhood liquor store.

With so many beers to choose from, and with a limited market in any given region, small-time brewers have turned to the Web in the hope of generating interest among beer-drinkers and distributors at a reasonable cost.

One such brewer is Yakima Brewing and Malting Company, maker of **Grant's Ales**, at `www.grants.com`. Brewmaster Bert Grant claims that his 15-year-old establishment was the first brewery pub to open in the United States since Prohibition. The Grant's web site makes good use of graphics without demanding an ISDN connection—Guinness, take note!—and it includes a list of distributors around the country. (Curiously enough, federal law doesn't allow brewers to list retailers or pubs that sell their suds.)

Getting capital for marketing and expansion is always a challenge for independent brewers. **The Spring Street Brewing Company** of New York's Greenwich Village is trying to solve that problem by offering shares of stock on its web site at **http://**`plaza.interport.net/witbeer`. You can buy 200 shares for **US$550**—or, if you'd rather spend your money on beer, you can ask your liquor dealer to order a pallet of Spring Street's Belgian-recipe ales.

Many small brewsites have discovered the value of selling souvenir merchandise online. A company like **Big Sky Brewing Company**, (`www.graphi.com/bigskybrew.html`) can earn as much from a t-shirt as it does from a six-pack of Moose Drool, Powder Hound, or Whistle Pig Red. Best of all, that **$15** t-shirt or **$80** jacket will be seen by drinkers who spend more time swilling beer than surfing the Web.

Building community is another great way to generate brand loyalty and favorable word of mouth. Some marketers try to do this with chat rooms and bulletin boards. **The Oldenberg Brewing Company** of Ft. Mitchell, Kentucky has taken community-building a step further by promoting a real-life "Beer Camp" at **http://**`realbeer.com/oldenberg`.

Oldenberg's Beer Camp is a "three-day consumer extravaganza" that takes place twice a year, in March and September, at the brewery's brewhouse, 1,200-person beer hall, and beer garden just five miles from downtown Cincinnati. A typical camp includes discussions, demonstrations, and tastings of some 250 beers from around the world. Campers are organized into groups like the "Stouts," the "Ambers," and the "Pilsners," each with its own counselor, and graduates are awarded the coveted Beer Camp t-shirt and diploma.

The **Bad Frog Brewery Company** (`www.thewild.com/badfrog`) has a gimmick of its own: a recorded "ribbet" that plays when you enter its web site. If you have the RealAudio player installed, you can listen to the company's radio spots—including a commercial where Bad Frog's president defends his beer's Kermit-like mascot against charges of obscenity. (Bad Frog has been banned in New York and several other states because the amphibian on its label has an extended toe that could be interpreted as a pointing middle finger.)



Finally, the Boston Beer Company's **Samuel Adams Brewery** is no longer a microbrewery, but it's a fine example of a regional craft brewer that has maintained impeccable standards of quality despite having a large ad budget and a capable marketing staff. The company's web site at **http://**`samadams.com` is worth visiting for its brewery tour, which uses photos and text to show how a modern brewery makes beer. Be sure to open the "Beer Education" page for a beer dictionary, a "beer styles map of the world," the history and development of beer in America, and other facts for malt-and-barley fanciers.

MAIL-ORDER MALT BEVERAGES

There are two kinds of marketing: "pull," which seeks to generate demand at the consumer level, and "push," which tries to get products onto the shelves of retailers. Both are difficult for small brewers, and that's why mail-order beer clubs can be a valuable tool for microbreweries—not to mention a boon for the consumer.

At least half a dozen such clubs advertise on the Web, but the most comprehensive site I've run across is the **Beer of the Month Clubs** from World Beer Direct at `www.worldbeerdirect.com/botmc.html`.

The Beer of the Month web site doesn't look like much, but it sells five different monthly packages—ranging from a "Microbrew Sampler" (9 regional brews for **$11.95** a month) to "The Connoisseur" (18 American microbrews and 6 international beers for **$33.95** a month). Unfortunately, the site doesn't offer online ordering; instead, it asks prospective subscribers to call an 800 number. Still, for microbrewers and beer-drinkers alike, the club concept makes a lot of sense—especially in towns where the only package store is a bar that sells canned Bud, Old Milwaukee, and Pabst by the case.

DOING IT YOURSELF

I once worked with an older gent who told me, "At some point in his life, every man has to buy a sports car and own a green suit." To these, one could add: "and make homebrew beer."

The very idea of boiling up a batch of brew seems incongruous at a time when microbreweries dot the landscape like espresso parlors, bagel shops, and WalMarts. Still, it's a rite of passage for many beer-drinkers—and for a few, it becomes an enjoyable hobby.

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A good starting point (at least for younger homebrewers) is **How to Brew Beer in Your Dorm Room** (`www.student.net/archives/07Dec95`). This page from Student.Net tells how to whip up a batch of ersatz ale with a **$50** starter kit and a hot plate. As author Mark Stibich says, "Brewing is much of a science as, say, sociology."

Another beginner's site is **The Beer Basics**, written by the American Howebrewers Association and posted at `www.csn.net/aob/brew.html`. The page tells "the simplest way to brew five gallons of beer" with gear that you can buy at any homebrew supply shop. If you don't have a shop in your neighborhood, you can order online from **The Cellar Homebrew** (`www.cellarhomebrew.com/indexyh.html`), or **Jack's Homebrew Supply** (`www.primaview.com/homebrew`).

BREWS IN REVIEW

If you'd rather leave your brewing to the professionals, you'll want advice on which of the leading brands and "craft beers" are worth drinking and which are best used to tempt slugs out of your garden. Any number of web sites are available to help you make the right choices. A few of my favorites are:

Beer is My Life! (`www.beerismylife.com`). This cluttered but informative site includes a Hall of Fame and a Hall of Swill to help you separate the sublime from the subpar.

The World Wide Beer Survey (`www.vpdesign.com/beer/beerquiz.htm`). Check the brands in your local booze barn against current Top 10 lists for Africa, Asia, Europe, North America, Oceania, and South America that your fellow beer buffs have created with their votes. When you've finished swigging your next brew, you can submit your own favorites by using the interactive map.

The Opinionated Beer Page (`www.webcom.com/tmbg/beer.html`). Read the reviews, check the "top picks," and add your own scores to the statistical mix.

Michael Jackson's Beer Hunter Online (`www.beerhunter.com`). Michael Jackson—the beer expert and author, not the singer—offers a "newly tasted" page, a brewery profile, articles on beer, advice for homebrewers, and other weekly features.

Bad Beer O' Th' Month (`www.cyberramp.net/~lavender/badbeer.htm`). Mitch Lavender tells what beers to avoid, using "undrinkability ratings" to define each offensive beer's level of wretchedness. A "good beer o' th' month" is included as a bonus.◆

BEER NEWSGROUPS

The Web is a great place to learn about beer, but for true interaction, there's nothing better than a newsgroup—even if the malt-related information is sometimes lost amid the cross-postings, flames, and spam. Here are three to try:

`rec.food.drink.beer`, which includes a FAQ.

`alt.beer`, a notch down the scale in the quality of its clientele and message threads.

`alt.homebrewing`, for the swig-your-own-swill gang.

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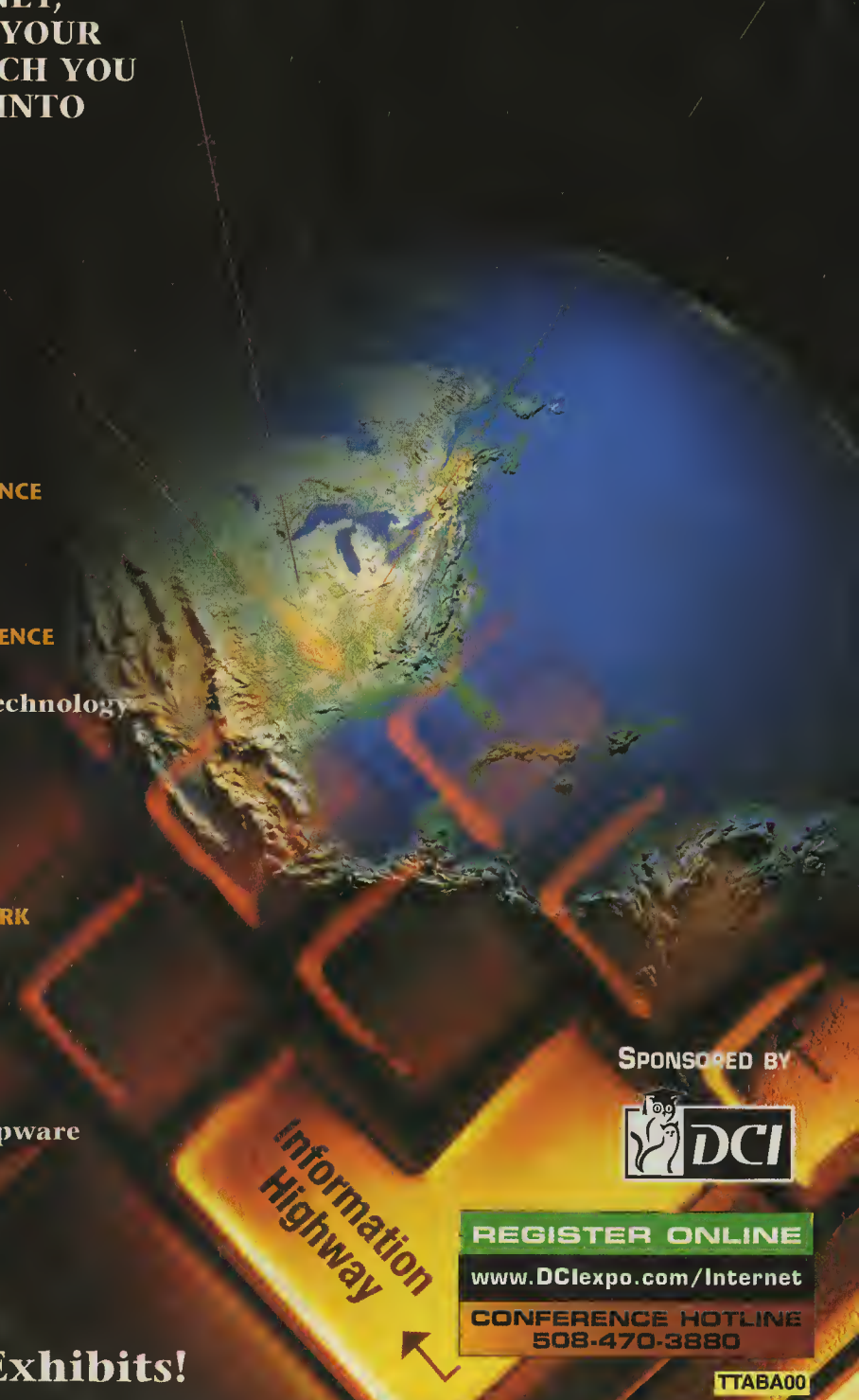
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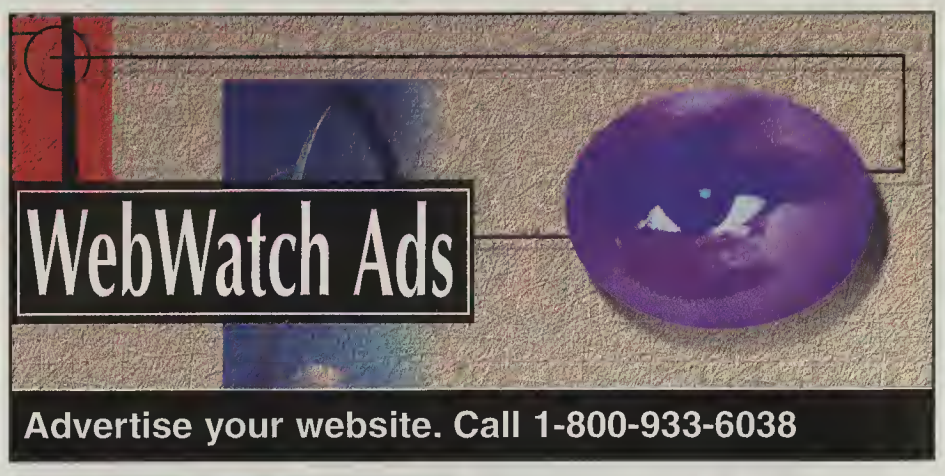
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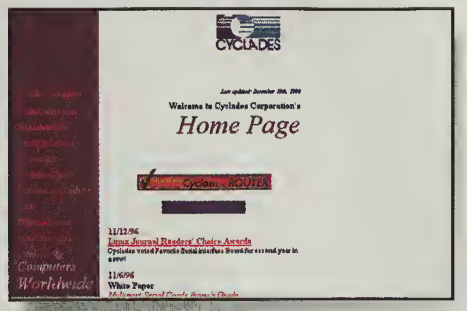
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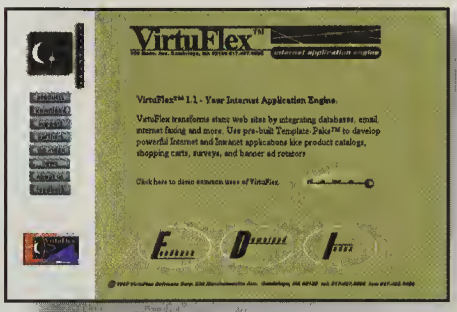
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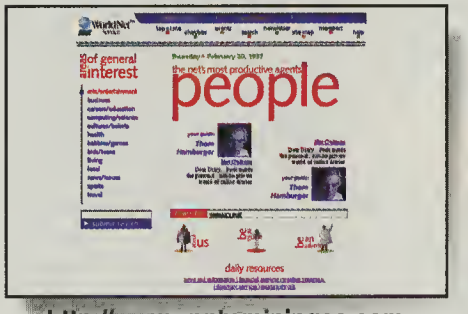
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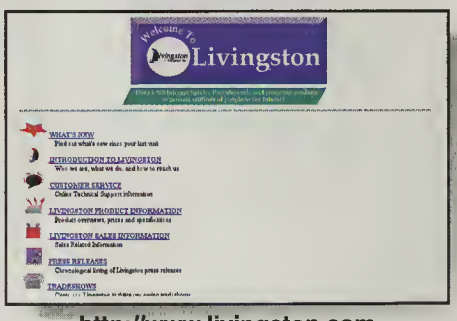
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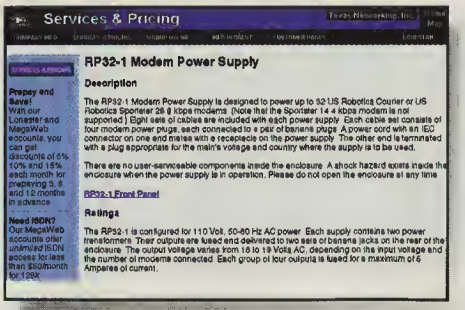
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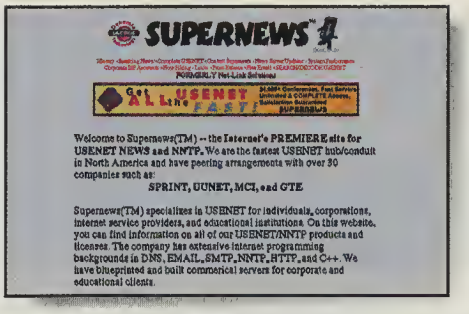
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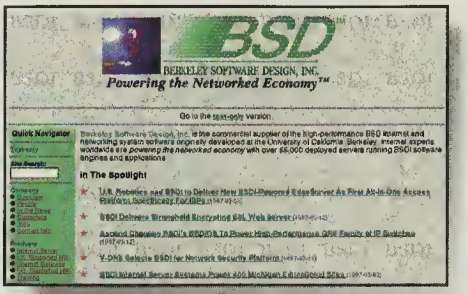
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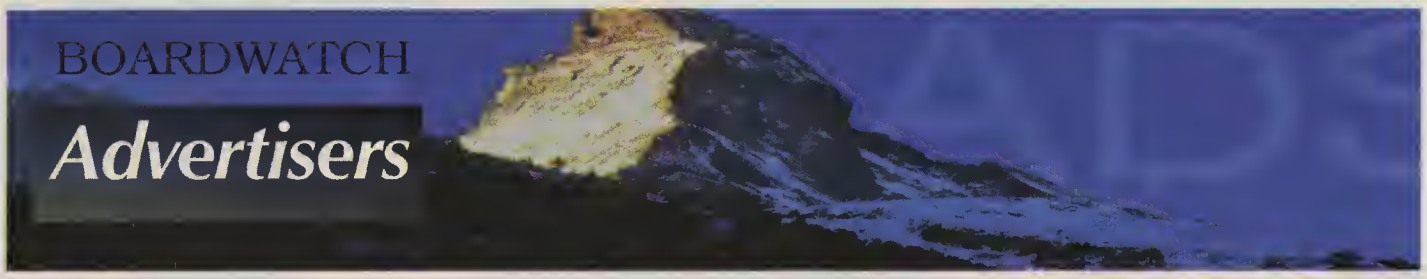
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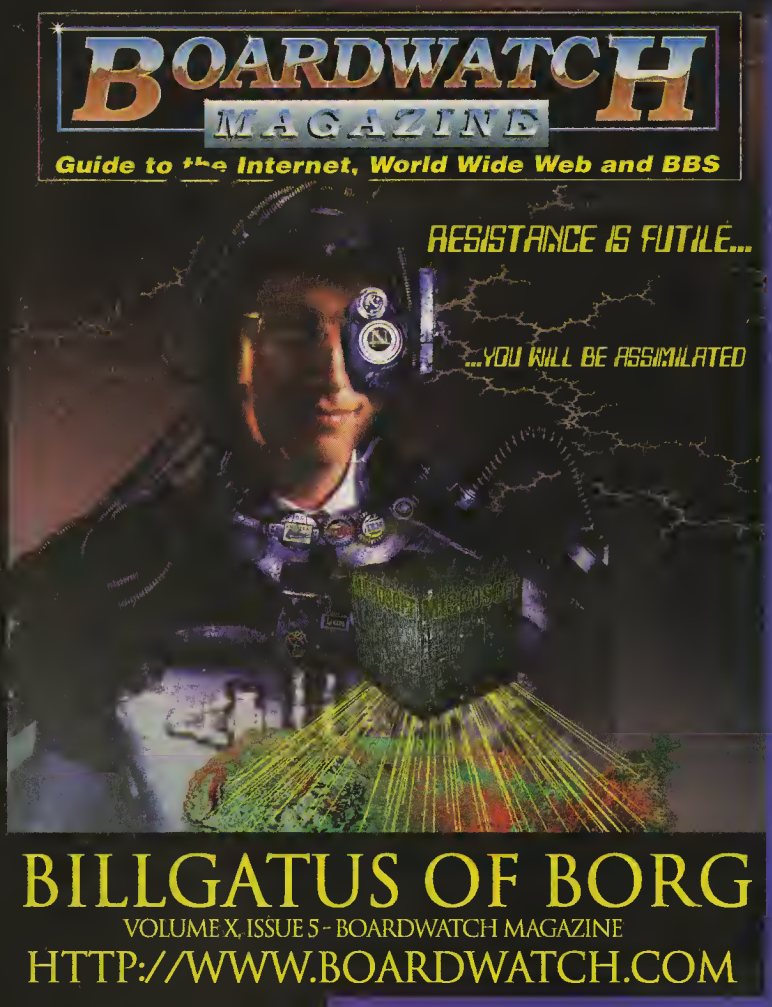
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DVORAK ONLINE by John C. Dvorak

AND WHAT'S AHEAD WITH THE TELECOMMUNICATIONS ACT OF 1996

120 years ago Alexander Graham Bell made the first phone call and a year later invented the telephone company. They've been lording it over us since then and until the passage of the controversial Telecommunications Act of 1996. They may still lord it over us, but some aspects of the game have changed. I've recently put together a talk about this issue and thought it would be worthwhile to outline aspects of the act that should interest readers of ***Boardwatch***.

In addition to his weekly syndicated radio call-in show, *Software/Hardtalk*, syndicated newspaper columns, magazine writing for ***MacUser***, ***PC Computing***, ***DEC Professional***, ***Information Technology***, and his featured "*Inside Track*" column in ***PC Magazine***, Dvorak is the author of several best-selling books, including ***Dvorak's Inside Track to DOS & PC Performance***, ***Dvorak's Guide to PC Telecommunications***, and ***Dvorak's Inside Track to the Mac***. *John can be reached at* dvorak@aol.com

First let's start with a short history of the telephone. The first commercial telephone was introduced in 1877, resembling a large, brown, wooden box. This was followed in 1878 when 3,000 telephones were leased around the nation. At the time the phone was considered an interesting tool for business and toy for the rich. It cost about **$150** a month to lease the device. Within a few years the full duplex phone was released which made conversations easier. By 1889 the number of phones had increased to around 250,000. About then the pay phone was introduced. In the early 20th century the movement was towards having a phone in every home and 3 million phones were in place. The party line was invented to make adding phones easier. Up to 12 parties might share the same line, each with distinctive ringing. Eavesdropping was a plague.

Other notable changes: mobile phone in the 1940s; direct dial long-distance in the 1950s; touch tone phones in the 1960s; FAX machines in the 1970s; Call Waiting/Three-Way Calling/Call Forwarding in the 1980s. And obviously cell phones. The 1990s brought us the Internet.

Cell phones and the Internet forced the adoption of the Telecommunications Act as too many ideas were cropping up which were hampered by regulation. Despite the Decency statues stuck into the Act (which have not to date been enforced) the Act was supposed to open competition.

The law was passed on February 6,1996 and attached to it was an implementation plan. Here are what I believe are the most interesting aspects of the Act.

First there is the rules regarding long-distance service. Once passed, the regional Bell Operating Companies (RBOCs) will be allowed to offer long-distance service outside of the areas where they provide wireline service. A complex process is required including meeting the requirements of a 14-point competitive checklist. This means instead of one big phone company dominating all phone service, we have the possibility of a slew of big phone companies dominating all phone service. But at least there will be a choice.

More interesting is the fact that local telephone companies must relinquish their local service monopolies. And they can't make it difficult for outsiders to use the wires. By law, the quality of the new service must be equal to or better than that of the local RBOC. The local RBOC must allow this and negotiate service sharing in good faith. Hello MCI and Sprint and AT&T. This will be fun to watch.

Here's another change: local cellular exchange carriers can immediately offer cellular long-distance services wherever they currently offer cellular services. This makes for more complex cellular networks.

Then we have video services coming too! All telephone companies may offer video programming within their service territories. As for the cable companies, they can now enter the phone business just like a phone company and do everything. Meanwhile all cable rates are to be deregulated by March 31, 1999, or sooner. I expect this will mean competition within cable areas for cable service.

As for broadcasting, various restrictions on television station ownership are changed. One-to-a-market rule looks like a goner. And broadcasters may own a cable franchise (still being written). No limit to number of radio stations owned by a single company. Licenses extended from 5 years to 8 years. Advanced systems automatically approved and we can expect to see more experimental broadcasting. And that infamous V-chip is required on new TVs.

Finally, as for making equipment, the RBOCs can now make equipment but not with each other. Although two RBOCs can jointly design a product. Expect to see these guys buy some of the better know equipment makers to do this.

Now this is just the tip of the iceberg for this document, which is hundreds of pages long and available online everywhere. My fear is that as we've followed open competition more and more we begin to see consolidation through mergers, failures and aggressive business practices. This results in a monopoly and government crackdown. I suspect this will happen again. But in the meantime we should be able to get some interesting new services for a good price. I hope! ◆

Dvorak's Recipe Nook



Cooking the Winners

One way I've learned about cooking is to examine the unique inventions done by semi-professional cooks who make a side living by entering competitions. Some of the most interesting and trendy dishes actually come out of cooking and recipe contests. The kicker to these things is that people have to typically use one certain ingredient. A recent contest required Butter Buds—a butter-flavor substitute preferred by dieters. The winner of the contest was Teresa Hannan Smith, from Santa Rosa, California. She got a $5,000 grand-prize for her Grilled Salmon Steaks with Ginger-Chive Sauce recipe.

Grilled Salmon Steaks with Ginger-Chive Sauce

4 salmon steaks (about 1 inch thick)
1/2 teaspoon dried dill weed
1-1/2 packets Butter Buds
1 teaspoon grated lime zest
1/2 cup low-sodium chicken broth
2 teaspoons fresh chives, chopped
1 teaspoon fresh ginger, minced
1 teaspoon fresh lime juice
16 cherry tomatoes (red and/or yellow), thinly sliced, drained (garnish)

Rinse salmon steaks and pat dry. Combine dill, 1/2 packet Butter Buds, and lime zest; sprinkle both sides of steaks with mixture, pressing to coat well. Place steaks on large nonstick stove-top grill pan. Cook over medium-high heat, about 5 minutes each side, or until fish flakes easily with fork. Meanwhile, heat chicken broth in small saucepan over low heat until very hot. Add 1 packet Butter Buds, stirring to dissolve. Stir in chives, ginger and lime juice. Serve warm ginger/chive sauce in small bowls for dipping, alongside salmon steaks. Garnish plates with sliced cherry tomatoes.

Makes 4 servings.

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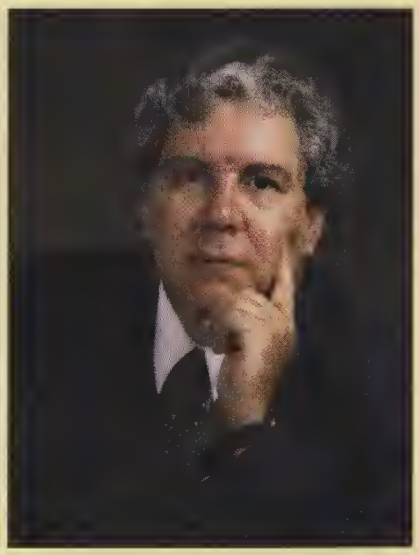
INTERNET SERVICE PROVIDER CONVENTION

- Growing and Funding Your ISP Business
- Legal and Legislative Issues
- Technical Operation - ISP Connectivity Technologies
- Web Servers, Hosting and Design
- Marketing Future Stategies
- 56k modem Technologies
- xDSL

We would like to invite you to the largest national and indeed international meeting of Internet Service Providers ever held – this August 20-23 at The San Francisco Hilton and Towers in San Francisco. The Internet Service Provider Convention (ISPCON) promises to be the most exciting gathering of the year, not so much because of what it is, but rather because of who is coming – a huge percentage of the 3600 Internet Service Providers who actually operate the Internet and in so many ways large and small mold and shape its future.

Choose from an intense set of over one hundred educational sessions and seminars from broad legal and social issues to very specific technical sessions on BGP, multihoming, and xDSL for ISPs.

So join us for the largest mass meeting of Internet Service Providers and related professionals ever gathered. The information, perspective, and contacts gained at this one event may change your business plans forever – and toward their ultimate success.



Jack Rickard

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Editor Boardwatch Magazine